

# SPECTRUM ENGINEERING INCORPORATED

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January 4, 2012

Mr. Jay Bandholz  
International Production Specialists  
35006 Washington Avenue  
Honey Creek, Wisconsin 53138

**Subject: Hydrite Chemical/IPS Project No. 19698 – Aboveground Vertical Tank  
Vertical Tank Drawing No. HC-V-19698, dated 8/31/11, Rev. 1  
Conditions of Professional Engineer's Certification  
Spectrum Engineering Project No. 12039**

Dear Mr. Bandholz:

This letter has been prepared to describe the conditions associated with the Professional Engineer's certification, dated January 4, 2012, provided on the above referenced drawings and calculations. This letter confirms that Spectrum Engineering Incorporated has reviewed the referenced drawings and calculation documents which were prepared by International Production Specialists (IPS). Spectrum Engineering has verified that the calculation and design details are in general consistent with the requirements of Underwriter's Laboratories Inc. (UL-142), 9<sup>th</sup> Edition, as the standard for "Steel Aboveground Tanks for Flammable and Combustible Liquids" for joints, thickness calculations of the ends, shell, manhole, fittings, and testing.

It must be noted that this review does not give rise to any liability of Spectrum Engineering Incorporated for general and specific manufacturing liabilities for this project or for a safe and fully operational system. IPS will remain the sole responsible party for the tank design and fabrication to meet the requirements of the purchaser.

Please call me if you have any questions regarding the conditions of the certification.

Sincerely,  
SPECTRUM ENGINEERING INCORPORATED

  
Farhad Mohsenian, P.E.  
President



Enclosure: Drawing HC-V-19698, dated 8/31/11, Rev. 1  
Calculations for Aboveground Vertical Tank, dated 1/4/12

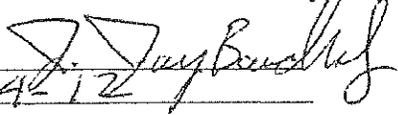
19395 West Capitol Drive, Brookfield, Wisconsin 53045





CALCULATIONS FOR  
ABOVEGROUND VERTICAL TANK  
ON SUPPORT LEGS T205  
7,000 GALLON  
IPS DWG# HC-V-19698,R1  
CONSTRUCTION UNDER  
UNDERWRITERS LABORATORIES  
UL 142 STANDARD, 9<sup>TH</sup> EDITION  
FOR HYDRITE CHEMICAL  
114 N. MAIN STREET  
COTTAGE GROVE, WI 53527

Prepared By: International Production Specialists, Inc.

Signature: 

Date: 1-4-12



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*F. Mohsenian* 1-4-2012

PER CONDITIONS OF  
PROFESSIONAL ENGINEER'S  
CERTIFICATION LETTER, 1-4-2012



**TANK DATA**

Size: 9' 0" I.D. x 14' 0" straight side  
Nom. Capacity: 7,000 gallons  
Product: Flammable or Combustible  
Product max. sp. gr.: 1.6  
Design pressure: Atmospheric  
Design Temp.: -20° F (min.) to 100° F (max.)

**Materials of Construction:**

Shell – A-240 316 S.S.  
Cone Top & Bottom - A-240 316 S.S.  
Nozzles – A-312 TP316  
Manway – A-240 316 S.S.  
Flanges – A-181 F316  
Couplings – A-181 F316

**Allowable stress:**

(From API 620 Standard)

S = 15,000 psi A-240 316 S.S.

(From ASME Code)

S = 20,000 psi A-240 316 S.S.

(From AISC Manual)

S = Per Tables A-36 Mild C.S.

S<sub>b</sub> = F<sub>b</sub> = S<sub>yield</sub> (0.6) = 36,000(0.6) = 21,600 psi (in bending)

**GENERAL CONSTRUCTION:**

Tank constructed per U.L. 142 standard. Sections 1-11 shall be applied where required for construction and specifically Sections 14-15 for vertical tanks shall be followed. Also applied will be Section 45 for manufacturing and production tests. All tank construction and design not expressly shown below shall follow the U.L 142 Standard.

**TANK SHELL REQUIREMENTS:**

Per UL 142 Section 15 the shell thickness shall be per Table 15.1 or a minimum of 0.115" for tank volume over 1100 gallons. Per Fig. 6.1 shell joints used were No. 1 for circumferential and No. 3 for longitudinal joints.

(Since using 3/16" lower shell and remaining 0.134" thick shell than O.K.)

**Check shell thickness because of suspended cone type bottom:**

Per API 620 3.10.2 determine the shell thickness

$$t = T(\text{max.}) / S E$$



where:

t = required cone thickness, in.

T(max.) = greater of  $T_{1s}$  and  $T_{2s}$ , lbs./in.

S = allowable stress, psi

E = joint efficiency at cone to shell junction

$$T_{1s} = (R/2) [P + (W + F)/A]$$

$$T_{2s} = R P$$

Where:

R = tank radius, in.

P = pressure due to static head, psi ( $P = 0.433H_s = 0.433(14)(1.6) = 9.7$  psi)

W = weight below spring line acting in same direction of P, sum of metal weight and product weight in cone, lbs.

Tank cone wt. = 930 lbs. Content wt. in cone = 396 gal. x 13.4 lbs/gal = 5,310 lbs.

F = additional vertical loads on vessel bottom, lbs.

A = cross sectional area of tank, sq. in. ( $A = \pi R^2 = \pi (54)^2 = 9161$  sq. in.)

$$T_{1s} = (54/2) [9.7 + ((930+5310) + 0)/9161] = 281 \text{ lbs./in.}$$

$$T_{2s} = 54 (9.7) = 524 \text{ lbs./in. (governs)}$$

Therefore;

$$t = T_{2s} / S E = 524 / (15000) (0.7) = 0.05 \text{ in.}$$

(Since using 3/16" plate than O.K.)

### **TANK BOTTOM REQUIREMENTS:**

Per UL 142 Section 15 the bottom thickness shall be per Table 15.1 or a minimum of 0.158" for tank volume over 1100 gallons. Per Fig. 6.1 bottom joints used were No. 1 for circumferential and No. 1 for longitudinal. Also Per Fig. 6.3 for cone to shell, joint No. 5 was used at a 122° angle.

(Since using 1/4" thick bottom than O.K.)

### **Check bottom thickness for suspended cone type:**

Per API 620 3.10.2 determine the cone bottom thickness

$$t = T(\text{max.}) / S E$$



where:

$t$  = required cone thickness, in.

$T(\text{max.})$  = greater of  $T_1$  and  $T_2$ , lbs./in.

$S$  = allowable stress, psi

$E$  = joint efficiency at cone to shell junction

$$T_1 = (R/2\cos a) [P + (W + F/A)]$$

$$T_2 = (R/\cos a) [P]$$

Where:

$R$  = tank radius, in.

$a$  =  $\frac{1}{2}$  the cone apex angle, deg

$P$  = pressure due to static head, psi

$W$  = weight below spring line acting in same direction of  $P$ , sum of metal weight and product weight in cone, lbs.

Tank cone wt. = 930 lbs. Content wt. in cone = 396 gal. x 13.4 lbs/gal = 5,310 lbs.

$F$  = additional vertical loads on vessel bottom, lbs.

$A$  = cross sectional area of tank, sq. in. ( $A = \pi R^2 = \pi (54)^2 = 9161$  sq. in.)

$$T_1 = (54 / (2 \cos 61) ) [9.7 + ((930+5310) + 0)/9161] = 580 \text{ lbs./in.}$$

$$T_2 = 54 (9.7) / \cos 61 = 1081 \text{ lbs./in. (governs)}$$

Therefore;

$$t = T_2 / S E = 1081 / (15000) (0.7) = 0.103 \text{ in. (Since using } 1/4'' \text{ plate than O.K.)}$$

#### Check compression ring area because of suspended cone type bottom:

Per API 620 3.12.4 determine the compression ring requirements

$$w_h = 0.6 [(R/\cos a) (t_h - c)]^{1/2}$$

$$w_c = 0.6 [(R) (t_c - c)]^{1/2}$$

where:

$w_h$  = width of bottom plate used for reinforcement, in.

$w_c$  = width of shell plate used for reinforcement, in.

$a$  =  $\frac{1}{2}$  the the apex angle of the cone, deg

$R$  = tank radius, in.

$t_h$  = thickness of bottom plate used for reinforcement, in.

$t_c$  = thickness of shell plate used for reinforcement, in.

$c$  = corrosion allowance, in.



$$w_h = 0.6 [(54/\cos 61) (0.25 - 0)]^{1/2} = 3.16 \text{ in.}$$

$$w_c = 0.6 [(54) (0.1875 - 0)]^{1/2} = 1.90 \text{ in.}$$

$$Q = T_2 w_h + T_{2s} w_c - T_1 R \sin a$$

Where:

Q = circumferential force at compression ring, lbs.

$$Q = 1081(3.16) + 524(1.90) - 580(54)(\sin 61) = -22982 \text{ lbs.}$$

The required compression ring area is,

$$A_c = Q / F_c$$

Where:

A<sub>c</sub> = required compression ring area, sq. in.

F<sub>c</sub> = allowable compressive stress per API 620 footnote to API 650, App. F.7.2 and modified per App. S.3.5.3 = 20,000(30,000/32000) = 18,750 psi

$$A_c = 22982 / 15000 = 1.53 \text{ sq. in.}$$

The actual compression ring area available from the plate is,

$$A = t_h w_h + t_c w_c = 0.25(3.16) + 0.1875(1.90) = 1.14 \text{ sq. in.}$$

The actual compression ring area available from the stiffener ring is,

$$A = t w = 0.3125(1.5) = 0.46 \text{ sq. in.}$$

(Since  $A = 1.14 + 0.46 = 1.60 > A_c$  then support is sufficient)

#### **TANK ROOF REQUIREMENTS:**

Per UL 142 Section 15 the top thickness shall be per Table 15.1 or a minimum of 0.086" for tank volume over 1100 gallons. For a cone height of 1/6 the tank radius, the min. thickness can be less than 0.167 in. (Since using .134" thick x 9" high top than O.K.)  
Per Fig. 6.4 the roof to shell joint used was No. 2.

#### **TANK EMERGENCY VENTING REQUIREMENTS:**

Per UL 142 Section 8.4 and 8.6 the emergency vent shall be per Table 8.1 based on the square footage of the shell, A<sub>s</sub>, and suspended bottom, A<sub>c</sub>.



D = diameter in ft.; R = D/2; H = shell height in ft.

$$\text{Shell area} = A_s = \pi D H = \pi (9) (14) = 396$$

$$\text{Cone area} = A_c = \pi R (R^2 + \text{coneh}^2)^{1/2} = \pi (4.5) (4.5^2 + 2.5^2)^{1/2} = 73$$

$$\text{Total wetted surface area } A = 396 + 73 = 469 \text{ sq. ft.}$$

Per Table 8.1 the required vent size is a 8" opening.  
(Since tank has a 8" opening then O.K.)

### LEG SUPPORTS:

Per UL 142 Section 30.3 a tank on leg supports shall be evaluated by calculation.

Use a W 12" beam at 45#/ft with the following properties;

$$\text{Moment of inertia about strong axis } I_x = 350 \text{ in.}^4$$

$$\text{Moment of inertia about weak axis } I_y = 50.0 \text{ in.}^4$$

$$\text{Section modulus about strong axis } Z_x = 58.1 \text{ in.}^3$$

$$\text{Section modulus about weak axis } Z_y = 12.4 \text{ in.}^3$$

$$\text{Least radius of gyration } r_y = 1.94 \text{ in.}$$

$$\text{Cross sectional area of beam } A = 13.2 \text{ in.}^2$$

$$\text{Beam depth } d = 12.06 \text{ in.}$$

$$\text{Beam width } bf = 8.045 \text{ in.}$$

Per Pressure Vessel Design Manual (Moss) and Pressure Vessel Design Handbook (Bednar) determine the imposed stresses.

### **Determine the operating weight:**

Dead Loads:

$$\text{Tank} = 7000\#$$

$$\text{Mixer} = 2000\#$$

$$\text{Railing} = 300\#$$

$$\text{Total} = 9,300\#$$

Contents Load: (full of product)

$$6662(\text{shell}) + 396(\text{cone}) \text{ gallons} \times 13.4\#/\text{gal} = 94,600\#$$

$$W_o = 9,300 + 94,600 = 103,900\# \text{ (use } 104,000\#)$$

### **Determine the maximum eccentric load, fl, applied to the leg at vessel:**

$$f_l = -F_v/N$$



where:

$F_v$  = total weight of tank when full,  $W_o$ , lbs.

$N$  = number of legs

$$f_1 = -104000/4 = -26,000 \text{ lbs.}$$

**Determine the axial stress,  $f_a$ , in the legs:**

$$f_a = f_1 / A$$

$$f_a = 26,000 / 13.2 = 1970 \text{ psi}$$

**Determine the bending stress,  $f_b$ , in the legs:**

$$f_b = M / Z_y = f_1(e) / Z_y$$

where:

$e$  = eccentricity of leg load = leg width / 2, in.

$$f_b = 26,000 (4.02) / 12.4 = 8429 \text{ psi}$$

**Determine the allowable stresses,  $F_a$  and  $F_b$ , from AISC Manual:**

Find the slenderness ratio  $Kl / r$

where:

$K$  = effective length factor

$l$  = maximum length of leg at base to cone to shell junction (spring line), in.

$r$  = least radius of gyration for leg chosen, in.

$$Kl / r = 1.2(94) / 1.94 = 59.2$$

From the AISC Manual the value of  $F_a = 17,530$  psi

From the AISC Manual  $F_b = F_y(0.6) = 36,000(0.6) = 21,600$  psi

**Evaluate the combined stresses:**

$$f_a / F_a = 1970 / 17530 = 0.112 \leq 0.15 \text{ therefore;}$$

$$\text{check } f_a / F_a + f_b / F_b < 1.0$$

Then;

$$1970 / 17530 + 8429 / 21600 = 0.50 < 1.0 \text{ (SO O.K.)}$$



**Max. local stress in compression in shell at leg:**

Above the Leg maximum localized stress:

$$f_c = f_1 / L_1 t$$

where,

$f_1$  = max. axial load at leg, lbs.

$L_1 = h + 2(Rt)^{1/2}$ , in.

$h$  = leg width, in.

$R$  = tank radius, in.

$$(Rt)^{1/2} = (54 \times 0.1875)^{1/2} = 3.18$$

$$L_1 = 12.06 + 2(3.18) = 18.4 \text{ in.}$$

$$f_c = 26000 / 18.4(0.1875) = 7527 \text{ psi}$$

General longitudinal stress:

$$f_c = W_o / \pi D t$$

where,

$D$  = tank diameter, in.

$t$  = shell thickness at leg, in.

$$f_c = (104000) / \pi (108)(.1875) = 1635 \text{ psi}$$

**Compare  $f_c$  to max. allowable compressive stress,  $F_c$ :**

$F_c = B$  (per UG-23(b) of ASME Code, Section VIII)

$$A = 0.125/(R/t) = 0.125/(54/.1875) = 0.00043$$

From chart in Section II, Part D, Subpart 3:  $B = 6,000 \text{ psi}$

Since  $F_c > f_c$  above then O.K.



**Base Plate Size:**

From AISC Manual choose the greater of;

$$t_b = m (3p/F_b)^{1/2} \text{ or}$$
$$t_b = n (3p/F_b)^{1/2}$$

$$m = \frac{1}{2}(a - 0.95d)$$
$$n = \frac{1}{2}(b - 0.8h)$$

where:

$t_b$  = base plate thickness, in.

$p$  = bearing pressure, psi

$F_b$  = allowable bending stress, psi

$a$  = length of base plate, in.

$b$  = width of base plate, in.

$h$  = width of beam, in.

$d$  = depth of beam, in.

For a base plate  $a = 16$ ,  $b = 12$ "

$$m = \frac{1}{2}(16 - 0.95(12.06)) = 2.27$$

$$n = \frac{1}{2}(12 - 0.8(8)) = 2.8$$

The bearing pressure:

$$p = f_l / (a)(b)$$

$$p = 26000 / (16)(12) = 136 \text{ psi}$$

The maximum bearing pressure allowed,  $p(\text{max.})$

$$p(\text{max.}) = 0.25 f_c' = 0.25(3000) = 750 \text{ psi (for 3000 psi concrete)}$$

Therefore:

$$t_b = n (3p/F_b)^{1/2} = 2.8 (3(250) / 21600)^{1/2} = 0.52 \text{ in.}$$

(Since using 3/4" plate thickness then O.K.)



Check the length of the leg to shell connection,  $L = 26\text{-}3/4$  in.:

$$t = T_1 / F_a = (f_l / L) / F_a$$

or

$$L = f_l / t F_a$$

where:

$T_1$  = longitudinal shell compression force  $f_l/L$  at the leg support, lbs./in.

$F_a$  = allowable compressive force (Boardman Formula), psi

$t$  = shell thickness, in.

$$F_a = 2 \times 10^6 (t/R)(1 - 100t / 3R)$$

$$F_a = 2 \times 10^6 (0.1875/54) (1 - 100(0.1875) / 3(54)) = 6140 \text{ psi (max. 10,000 psi)}$$

$$L = 26000 / (.1875)(6140) = 22.6 \text{ in.}$$

(Since using 26-3/4" then O.K.)

### MIXER LOADINGS:

#### **Data:**

Vertical Down Load,  $F$ : 1680 lbs.

Bending Moment,  $M$ : 60,000 in-lbs.

Torque,  $T$ : 10,000 in-lbs.

Safety Factor,  $SF$ : 2.5

Allowable bending Stress:  $S_b = 0.6S_y = 21600$  psi

Allowable Stress:  $S_a = 20000$  psi

Mixer Beams: W14" Beam at 22#/ft (cut down to make 6" high near center)

W 14" Section Moduli:  $Z_x = 29$  cu.in.;  $Z_y = 2.80$  cu.in.

W6" Beam at 12#/ft (approximation) Section Moduli:  $Z_x = 7.31$  cu.in.;  $Z_y = 1.50$  cu.in.

Span:  $L = 108$  in.

#### **Beam Size Check:**

Required Section Modulus Per Beam Due to Bending Moment Plus Down Load:

$$Z_{xr} = 0.5(M + Md) S.F. / S_b$$

Where:

$Md$  = moment due to  $F$  at center based on simple supported beam, in-lbs.

$$Md = F L/4 = 1680(108)/4 = 45360 \text{ in-lbs.}$$



**AT ENDS W14":**

$$Z_{xr} = 0.5(60,000 + 45360)(2.5) / 21,600 = 6.1 \text{ cu.in.}$$

Since actual  $Z_x = 29 > Z_{xr} = 6.1$  required then O.K.

Required Section Modulus Per Beam Due to Torque:

$$Z_{yr} = 0.5(T) \text{ S.F./ Sb}$$

$$Z_{yr} = 0.5(10,000)(2.5) / 21,600 = 0.58 \text{ cu.in.}$$

Since actual  $Z_y = 2.80 > Z_{yr} = 0.58$  required then O.K.

**AT CENTER W6" :**

$$Z_{xr} = 0.5(60,000 + 45360)(2.5) / 21,600 = 6.1 \text{ cu.in.}$$

Since actual  $Z_x = 7.31 > Z_{xr} = 6.1$  required then O.K.

Required Section Modulus Per Beam Due to Torque:

$$Z_{yr} = 0.5(T) \text{ S.F./ Sb}$$

$$Z_{yr} = 0.5(10,000)(2.5) / 21,600 = 0.58 \text{ cu.in.}$$

Since actual  $Z_y = 1.50 > Z_{yr} = 0.58$  required then O.K.

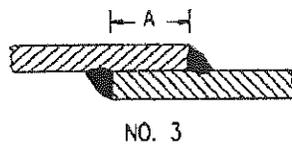
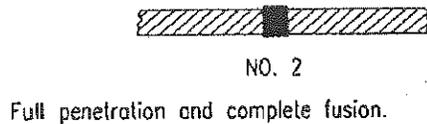
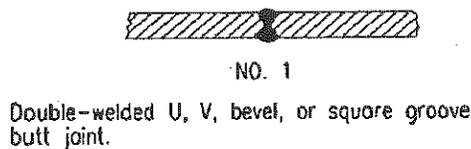


Hydrite Chemical  
Tank No. T205  
Date: 1-4-2012

# **APPENDICES**

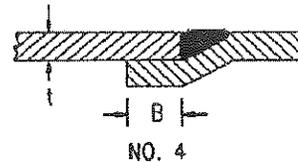


**Figure 6.1**  
**Shell joints**

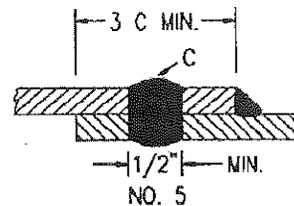


Double-welded full fillet lap joint, or single-welded full fillet lap joint on outside with 1-inch (25.4-mm) intermittent weld spaced not over 12 inches (0.3 m) on inside; minimum overlap, "A" - 1/2 inch (12.7 mm) for tank diameters 48 inches (1.2 m) or less, 3/4 inch (19.1 mm) for tank diameters over 48 inches (1.2 m).

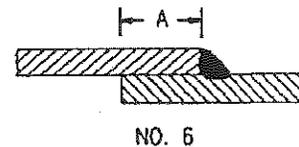
S2054C



Groove weld equivalent in thickness to "1"; full penetration and complete fusion; minimum overlap, "B" - 1/2 inch (12.7 mm).



Full fillet weld on outside; "C" is 1/2 inch (12.7 mm) minimum diameter lock weld spaced not over 12 inches.

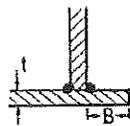


Single-welded full fillet lap joint; minimum overlap, "A" - 1/2 inch (12.7 mm) for tank diameters 48 inches (1.2 m) or less, 3/4 inch (19.1 mm) for tank diameters over 48 inches (1.2 m). This joint shall not be used on tanks with a diameter greater than 65 inches (1.65 m) unless it is used on the shell of the secondary containment tank where the secondary containment shell is in direct contact with the primary tank.



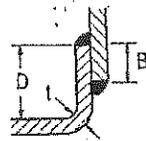
**Figure 6.3**  
**Bottom joints for vertical cylindrical tanks**

Revised Figure 6.3 effective December 15, 2009

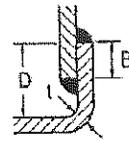


NO. 1

Double-welded full fillet joint; minimum overlap, "B" - 1/2 inch (12.7 mm) or 1-1/2 t, whichever is greater.

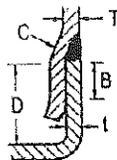


NO. 2



NO. 3

Double-welded full fillet lap joint; minimum overlap, "B" - 1/2 inch (12.7 mm) or 1-1/2t, whichever is greater; "D" is 5 t or greater, but not less than 1 inch (25.4 mm).



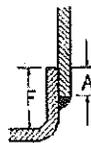
NO. 4

Groove weld at least equivalent in thickness to that of thinner member joined; minimum overlap, "B" - 1/2 inch (12.7 mm) or 1-1/2 t, whichever is greater, depth of offset, "C" - equals T; "D" is 5t or greater, but not less than 1/2 inch (12.7 mm).



NO. 5

Double-welded U, V, bevel, or square groove butt joint; full penetration and complete fusion.

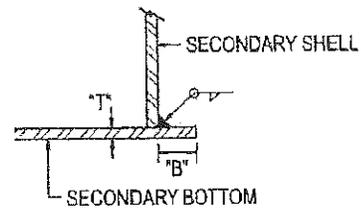


NO. 6



NO. 7

Single-welded full fillet lap joint, single-welded full fillet lap joint on outside with 1-inch (25.4 mm) intermittent weld spaced not over 12 inches (0.3 m) on inside; minimum overlap, "A" - 1/2 inch (12.7 mm); "F" is five times head thickness or greater, but not less than 1/2 inch (12.7 mm).



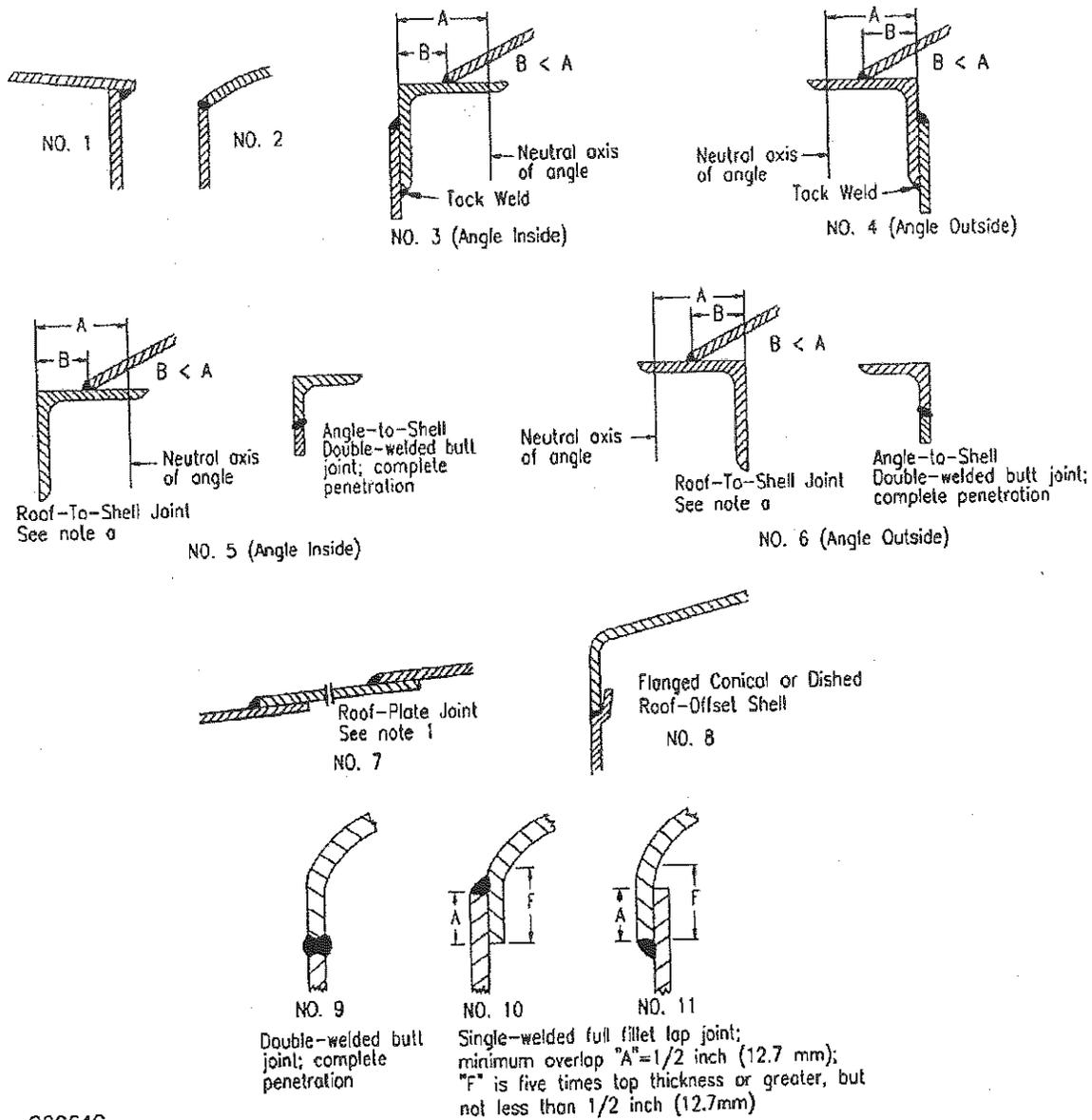
NO. 8

Welded full fillet joint  
 "B" = 1/2 inch (12.7mm) or 1 1/2 T, whichever is greater.



**Figure 6.4**  
**Roof joints for vertical cylindrical tanks**

Figure 6.4 effective June 28, 2007



S2064C

NOTE - Unless otherwise indicated, all welds are to be full fillet welds, at least the thickest of the thinnest material.



## Users That Have Taken a Course

Users selected: 160 AND Course selected: 1 AND Date/Time BETWEEN January 1, 2015 12:00 AM AND September 21, 2015 11:59 PM

### H-AF-HAZWASTE Hazardous Waste Awareness (HazWaste)

| Last Name   | First Name       | MI | Title                  | Date/Time                  | Result | Score  | Hours | Cost |
|-------------|------------------|----|------------------------|----------------------------|--------|--------|-------|------|
| Adams       | John             | W  | Process Logistics (CG) | July 20, 2015 03:50 PM     | Pass   | 100.00 | 0.20  | 0.00 |
| Adkins      | Paul             | A  | Warehouse (CE)         | August 17, 2015 04:10 PM   | Pass   | 90.00  | 0.20  | 0.00 |
| Archambault | Joshua           |    | Production (CW)        | March 27, 2015 02:29 PM    | Pass   | 90.00  | 0.20  | 0.00 |
| Archambault | Joshua           |    | Production (CW)        | May 22, 2015 08:59 AM      | Pass   | 90.00  | 0.20  | 0.00 |
| Bailey      | Robert           | M  | Production (CE)        | April 22, 2015 05:53 PM    | Pass   | 90.00  | 0.20  | 0.00 |
| Barnhill    | James            | M  | Engineering (CE)       | June 3, 2015 11:18 AM      | Pass   | 90.00  | 0.20  | 0.00 |
| Bartelt     | Michael          | E  | Production (CE)        | April 26, 2015 04:26 PM    | Pass   | 100.00 | 0.20  | 0.00 |
| Baukin      | John             | T  | Warehouse (CE)         | June 2, 2015 06:56 AM      | Pass   | 100.00 | 0.20  | 0.00 |
| Bauler      | Andrew           | D  | Production (CE)        | April 20, 2015 03:53 PM    | Pass   | 100.00 | 0.20  | 0.00 |
| Beck        | Taylor           | J  | Process Engineers (CE) | June 29, 2015 10:11 AM     | Pass   | 90.00  | 0.20  | 0.00 |
| Bjugstad    | Dylan            |    | Production (CE)        | July 30, 2015 12:23 AM     | Pass   | 100.00 | 0.20  | 0.00 |
| Bladl       | Laurence (Larry) | H  | Production (CW)        | June 15, 2015 07:42 AM     | Pass   | 100.00 | 0.20  | 0.00 |
| Bradley     | Paul             |    | Production (CE)        | May 25, 2015 07:46 PM      | Pass   | 100.00 | 0.20  | 0.00 |
| Brandl      | Kori             | L  | Quality (CG)           | June 1, 2015 12:39 PM      | Pass   | 100.00 | 0.20  | 0.00 |
| Brandon     | Christopher      | M  | Production (CE)        | May 30, 2015 11:48 AM      | Pass   | 100.00 | 0.20  | 0.00 |
| Braun       | Timothy          |    | Maintenance (CE)       | July 1, 2015 08:31 AM      | Pass   | 100.00 | 0.20  | 0.00 |
| Brown       | Daniel           | R  | Production (CE)        | April 23, 2015 10:11 AM    | Pass   | 100.00 | 0.20  | 0.00 |
| Brushaber   | David            | S  | Engineering (CE)       | June 1, 2015 04:03 PM      | Pass   | 100.00 | 0.20  | 0.00 |
| Bushman     | Marfin           | V  | Production (CE)        | June 15, 2015 03:01 AM     | Pass   | 100.00 | 0.20  | 0.00 |
| Butcher     | Lawrence         |    | Production (CE)        | May 13, 2015 12:34 AM      | Pass   | 100.00 | 0.20  | 0.00 |
| Buzzell     | Paul             | T  | Transportation (CW)    | July 7, 2015 05:10 AM      | Pass   | 100.00 | 0.20  | 0.00 |
| Cain        | Jason            |    | Production (CE)        | February 13, 2015 10:36 AM | Pass   | 90.00  | 0.20  | 0.00 |
| Cain        | Jason            |    | Production (CE)        | April 29, 2015 02:19 AM    | Pass   | 100.00 | 0.20  | 0.00 |
| Clifton     | Jeremy           | R  | Maintenance (CE)       | June 29, 2015 11:13 AM     | Pass   | 100.00 | 0.20  | 0.00 |
| Coffey      | Aaron            |    | Production (CE)        | March 5, 2015 10:07 AM     | Pass   | 100.00 | 0.20  | 0.00 |
| Coffey      | Aaron            |    | Production (CE)        | April 27, 2015 03:25 PM    | Pass   | 100.00 | 0.20  | 0.00 |
| Cofie       | Owen             |    | Laboratory (CA)        | June 30, 2015 08:12 PM     | Pass   | 90.00  | 0.20  | 0.00 |
| Cooper      | Chris            |    | Process Engineers (CE) | August 20, 2015 04:53 PM   | Pass   | 100.00 | 0.20  | 0.00 |
| Craig       | Kenneth          | R  | Production (CW)        | April 27, 2015 04:22 PM    | Pass   | 100.00 | 0.20  | 0.00 |
| Cutchins    | Joseph           | J  | Production (CE)        | April 25, 2015 05:38 AM    | Pass   | 100.00 | 0.20  | 0.00 |
| Day         | Joshua           |    | Production (CE)        | May 5, 2015 09:41 PM       | Pass   | 100.00 | 0.20  | 0.00 |
| Demler      | Harley           |    | Production (CE)        | May 30, 2015 08:38 AM      | Pass   | 100.00 | 0.20  | 0.00 |
| Downer      | Mark             |    | Maintenance (CE)       | August 12, 2015 02:33 PM   | Pass   | 100.00 | 0.20  | 0.00 |
| Dushack     | Jacob            | M  | Warehouse (CE)         | May 30, 2015 03:14 PM      | Pass   | 100.00 | 0.20  | 0.00 |



## Users That Have Taken a Course

Users selected: 160 AND Course selected: 1 AND Date/Time BETWEEN January 1, 2015 12:00 AM AND September 21, 2015 11:59 PM

|              |          |   |                        |                            |      |        |      |      |
|--------------|----------|---|------------------------|----------------------------|------|--------|------|------|
| Dyer         | Sean     |   | Production (CE)        | March 6, 2015 03:26 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Dyer         | Sean     |   | Production (CE)        | May 20, 2015 10:16 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Eilert       | Reed     | E | Production (CE)        | April 20, 2015 10:16 AM    | Pass | 100.00 | 0.20 | 0.00 |
| Endres       | Hank     |   | Process Logistics (CG) | July 2, 2015 12:01 PM      | Pass | 90.00  | 0.20 | 0.00 |
| Farmer       | Travis   |   | Production (CW)        | August 19, 2015 12:10 PM   | Pass | 80.00  | 0.20 | 0.00 |
| Fiorvanti    | Skylar   |   | Laboratory (CA)        | April 18, 2015 09:48 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Franz        | Joshua   |   | Production (CE)        | May 25, 2015 12:19 PM      | Fail | 50.00  | 0.20 | 0.00 |
| Franz        | Joshua   |   | Production (CE)        | May 25, 2015 12:22 PM      | Pass | 80.00  | 0.20 | 0.00 |
| Frey         | Bruce    | A | Warehouse (CW)         | June 1, 2015 08:25 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Gable        | Timothy  | J | Production (CW)        | June 10, 2015 12:59 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Gagner       | Steven   | M | Production (CE)        | April 22, 2015 09:24 PM    | Pass | 90.00  | 0.20 | 0.00 |
| Gehler       | Amy      | L | Process Logistics (CG) | June 10, 2015 12:40 AM     | Pass | 100.00 | 0.20 | 0.00 |
| Gildersleeve | Jesse    |   | Production (CE)        | August 24, 2015 08:33 PM   | Pass | 100.00 | 0.20 | 0.00 |
| Gile         | Robert   |   | Warehouse (CW)         | May 7, 2015 08:17 PM       | Pass | 90.00  | 0.20 | 0.00 |
| Gilmore      | Angela   | N | Maintenance (CE)       | June 26, 2015 12:08 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Grimes       | Angela   |   | Quality (CG)           | April 20, 2015 11:36 AM    | Pass | 100.00 | 0.20 | 0.00 |
| Gust         | Jason    | A | Production (CE)        | May 10, 2015 08:28 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Gust         | Jerry    | S | Production (CE)        | May 30, 2015 11:17 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Hannahs      | Kurt     | E | Laboratory (CA)        | June 9, 2015 06:16 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Harshbarger  | Nathan   | M | Production (CE)        | June 12, 2015 10:32 AM     | Pass | 100.00 | 0.20 | 0.00 |
| Hartenbower  | Brian    |   | Production (CE)        | May 27, 2015 09:34 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Hauge        | Geoffrey | J | Warehouse (CW)         | June 15, 2015 03:07 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Hawkinson    | Tony     | L | Production (CE)        | April 17, 2015 10:44 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Hebgen       | Timothy  | J | Laboratory (CA)        | July 3, 2015 01:08 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Heitkamp     | Claire   |   | Laboratory (CA)        | April 22, 2015 04:47 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Hoepfner     | Nicholas |   | Laboratory (CA)        | June 30, 2015 11:03 AM     | Pass | 100.00 | 0.20 | 0.00 |
| Holan        | James    | D | Transportation (CW)    | June 18, 2015 03:36 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Housley      | Clinton  | C | Production (CW)        | June 18, 2015 03:52 PM     | Pass | 90.00  | 0.20 | 0.00 |
| Illgen       | Arnold   | H | Production (CE)        | May 10, 2015 11:03 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Jacque       | Brian    | K | Production (CE)        | May 8, 2015 12:13 AM       | Pass | 100.00 | 0.20 | 0.00 |
| Janssen      | Jeffrey  | W | Process Engineers (CE) | June 26, 2015 10:58 AM     | Pass | 100.00 | 0.20 | 0.00 |
| Jokl         | Nicole   | M | Quality (CG)           | February 24, 2015 04:08 PM | Pass | 100.00 | 0.20 | 0.00 |
| Jokl         | Nicole   | M | Quality (CG)           | April 22, 2015 02:18 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Jokl         | Timothy  | R | Production (CE)        | May 27, 2015 08:34 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Keaton       | William  | R | Production (CE)        | May 31, 2015 05:36 AM      | Pass | 90.00  | 0.20 | 0.00 |
| Kilian       | Jacob    | D | Production (CW)        | June 18, 2015 10:39 PM     | Pass | 90.00  | 0.20 | 0.00 |
| Kind         | Nicholas | J | Production (CE)        | June 3, 2015 05:43 AM      | Pass | 100.00 | 0.20 | 0.00 |
| King         | Randy    |   | Production (CW)        | June 1, 2015 09:06 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Klingbeil    | Dennis   | J | Transportation (CW)    | April 29, 2015 02:06 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Koehler      | Rita     | K | Process Logistics (CG) | June 3, 2015 02:53 PM      | Pass | 100.00 | 0.20 | 0.00 |



## Users That Have Taken a Course

Users selected: 160 AND Course selected: 1 AND Date/Time BETWEEN January 1, 2015 12:00 AM AND September 21, 2015 11:59 PM

|              |                 |   |                        |                            |      |        |      |      |
|--------------|-----------------|---|------------------------|----------------------------|------|--------|------|------|
| Koenigs      | Michael         | G | Warehouse (CE)         | June 8, 2015 01:38 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Koetterhagen | Ben             | W | Process Logistics (CG) | July 6, 2015 01:11 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Kontny       | Nathen          |   | Process Logistics (CG) | June 15, 2015 02:44 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Kreitzer     | Gregory         |   | Engineering (CE)       | June 8, 2015 09:48 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Kubly        | Ivan            | F | Warehouse (CW)         | May 12, 2015 12:00 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Kuhse        | Steven          | E | Maintenance (CE)       | April 22, 2015 08:15 AM    | Pass | 100.00 | 0.20 | 0.00 |
| Kunding      | Jason           | P | Process Engineers (CE) | July 26, 2015 10:26 AM     | Pass | 100.00 | 0.20 | 0.00 |
| LaSchiava    | Michael         | D | Production (CE)        | May 18, 2015 03:31 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Lehman       | Gaye            | K | Laboratory (CA)        | June 17, 2015 12:08 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Lindemann    | Scott           |   | Maintenance (CE)       | June 8, 2015 09:59 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Lodding      | Christopher     | R | Production (CE)        | April 19, 2015 07:39 PM    | Pass | 90.00  | 0.20 | 0.00 |
| Love         | Daniel          | I | Laboratory (CA)        | April 22, 2015 02:10 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Lowrey       | Spencer         | L | Production (CE)        | May 30, 2015 12:07 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Lueck        | Kristine (Kris) | M | Office (CG)            | July 10, 2015 09:27 AM     | Pass | 80.00  | 0.20 | 0.00 |
| Lueck        | Kristine (Kris) | M | Office (CG)            | September 9, 2015 07:10 AM | Pass | 100.00 | 0.20 | 0.00 |
| Mack         | Lonnie          | K | Process Logistics (CG) | May 12, 2015 01:49 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Maderski     | James           | E | Production (CE)        | June 11, 2015 08:04 AM     | Pass | 100.00 | 0.20 | 0.00 |
| Martel       | Matthew         | P | Engineering (CE)       | May 1, 2015 09:00 AM       | Pass | 90.00  | 0.20 | 0.00 |
| Matthes      | Megan           | J | Process Engineers (CE) | May 19, 2015 04:35 PM      | Pass | 100.00 | 0.20 | 0.00 |
| McCutcheon   | Luke            | T | Process Engineers (CE) | August 24, 2015 03:31 PM   | Pass | 100.00 | 0.20 | 0.00 |
| McRoberts    | Eric            |   | Production (CE)        | March 6, 2015 03:21 PM     | Pass | 90.00  | 0.20 | 0.00 |
| McRoberts    | Eric            |   | Production (CE)        | April 22, 2015 09:48 AM    | Pass | 90.00  | 0.20 | 0.00 |
| Meier        | Brad            |   | Process Logistics (CG) | June 3, 2015 04:25 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Milbradt     | Michael         | L | Laboratory (CA)        | June 18, 2015 02:37 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Moreno       | Jennifer        |   | Engineering (CE)       | August 21, 2015 11:08 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Moser        | Nicholas        | A | Production (CE)        | April 29, 2015 12:56 AM    | Pass | 90.00  | 0.20 | 0.00 |
| Mueller      | Dale            | J | Production (CE)        | May 25, 2015 05:10 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Nag          | Sujoy           |   | Laboratory (CA)        | July 20, 2015 04:14 AM     | Pass | 90.00  | 0.20 | 0.00 |
| Narlock      | Zachary         |   | Production (CE)        | July 30, 2015 01:32 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Nelson       | Taylor          |   | Process Engineers (CE) | June 9, 2015 09:40 AM      | Pass | 90.00  | 0.20 | 0.00 |
| Nipp         | Crystal         | A | Laboratory (CA)        | April 19, 2015 07:28 AM    | Pass | 100.00 | 0.20 | 0.00 |
| O'Connell    | Scott           | E | Production (CE)        | April 23, 2015 07:27 PM    | Fail | 70.00  | 0.20 | 0.00 |
| O'Connell    | Scott           | E | Production (CE)        | April 23, 2015 07:28 PM    | Pass | 80.00  | 0.20 | 0.00 |
| O'Connell    | William (Will)  | J | Maintenance (CE)       | June 8, 2015 12:34 PM      | Pass | 100.00 | 0.20 | 0.00 |
| O'Connor     | Andrew          |   | Production (CE)        | September 3, 2015 11:18 AM | Pass | 100.00 | 0.20 | 0.00 |
| Oestreich    | Michael         |   | Warehouse (CW)         | June 8, 2015 02:36 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Olson        | Steven (Steve)  | R | Production (CW)        | August 7, 2015 03:58 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Phillips     | James           |   | Maintenance (CE)       | August 25, 2015 11:07 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Podgorski    | Nick            | R | Production (CE)        | May 13, 2015 10:31 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Quam         | David           | J | Transportation (CW)    | May 20, 2015 04:16 AM      | Pass | 100.00 | 0.20 | 0.00 |



## Users That Have Taken a Course

Users selected: 160 AND Course selected: 1 AND Date/Time BETWEEN January 1, 2015 12:00 AM AND September 21, 2015 11:59 PM

|              |                   |   |                        |                           |      |        |      |      |
|--------------|-------------------|---|------------------------|---------------------------|------|--------|------|------|
| Quam         | Thomas            |   | Production (CW)        | April 20, 2015 08:22 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Raborn       | Janelle           |   | Laboratory (CA)        | May 5, 2015 03:44 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Ramsey       | William           |   | Production (CE)        | May 5, 2015 05:01 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Reinhard     | Erik              | T | EHS (CG)               | April 22, 2015 09:11 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Renz         | Lucas             | A | Engineering (CE)       | June 5, 2015 12:38 PM     | Pass | 90.00  | 0.20 | 0.00 |
| Rich         | Nathan            | L | Production (CE)        | May 3, 2015 01:23 AM      | Pass | 90.00  | 0.20 | 0.00 |
| Roemer       | Luke              |   | Production (CE)        | May 13, 2015 01:13 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Ruhoff       | Alyce             |   | Laboratory (CA)        | January 13, 2015 09:08 AM | Pass | 100.00 | 0.20 | 0.00 |
| Ruhoff       | Alyce             |   | Laboratory (CA)        | May 25, 2015 09:26 PM     | Pass | 90.00  | 0.20 | 0.00 |
| Schaefer     | David             | M | Production (CE)        | May 17, 2015 02:55 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Schertz      | Andrew            | D | Production (CE)        | April 28, 2015 08:05 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Schlak       | Curtis            | A | Production (CE)        | April 17, 2015 10:51 PM   | Pass | 100.00 | 0.20 | 0.00 |
| Schmidt      | Charles (Charlie) | L | Transportation (CW)    | May 12, 2015 03:38 AM     | Pass | 100.00 | 0.20 | 0.00 |
| Schmidt      | Jerry             | F | Transportation (CW)    | May 13, 2015 01:04 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Schueller    | Jonathan (Jon)    |   | Laboratory (CA)        | April 25, 2015 04:46 PM   | Pass | 100.00 | 0.20 | 0.00 |
| Schuessler   | Brian             | D | Process Engineers (CE) | April 28, 2015 11:33 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Schwartz     | Joseph            |   | Warehouse (CW)         | June 30, 2015 01:00 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Seggerman    | Brenda            | R | EHS (CG)               | June 26, 2015 01:24 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Sherratt     | Luke              | R | Production (CE)        | April 17, 2015 08:33 PM   | Pass | 100.00 | 0.20 | 0.00 |
| Sigman       | Eric              | M | Production (CE)        | June 20, 2015 05:39 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Sijan        | Zarko             | P | Production (CE)        | April 23, 2015 10:18 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Silvia       | Richard           |   | Production (CE)        | April 30, 2015 05:45 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Simoni       | Benjamin          | V | Production (CE)        | July 1, 2015 04:29 AM     | Pass | 100.00 | 0.20 | 0.00 |
| Sitts        | Jay               | C | Maintenance (CE)       | May 4, 2015 09:19 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Smith        | Brian             |   | Production (CE)        | August 10, 2015 01:41 PM  | Pass | 100.00 | 0.20 | 0.00 |
| Smith        | Daniel            | J | Engineering (CE)       | April 22, 2015 08:43 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Smith        | Phillip           | A | Production (CE)        | May 25, 2015 02:39 AM     | Pass | 90.00  | 0.20 | 0.00 |
| Spahn        | Christopher       | C | Production (CE)        | July 25, 2015 01:45 AM    | Pass | 100.00 | 0.20 | 0.00 |
| Stewart      | David             | J | Transportation (CW)    | July 23, 2015 04:21 PM    | Pass | 90.00  | 0.20 | 0.00 |
| Strickland   | Taft              |   | Production (CE)        | August 25, 2015 10:27 AM  | Pass | 90.00  | 0.20 | 0.00 |
| Strnad       | John              |   | Process Logistics (CG) | June 1, 2015 04:51 PM     | Pass | 90.00  | 0.20 | 0.00 |
| Stueber      | Mark              | A | Transportation (CW)    | June 29, 2015 01:15 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Stueck       | Amy               | L | Quality (CG)           | April 27, 2015 09:12 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Sullivan     | Timothy           |   | Production (CE)        | July 9, 2015 08:44 AM     | Pass | 100.00 | 0.20 | 0.00 |
| Teeter       | Derek             | R | Production (CE)        | June 3, 2015 09:44 AM     | Pass | 100.00 | 0.20 | 0.00 |
| TenPas       | Erin              |   | Laboratory (CA)        | August 5, 2015 02:53 PM   | Pass | 80.00  | 0.20 | 0.00 |
| Teubert      | Ahren             |   | Production (CE)        | July 3, 2015 03:01 PM     | Pass | 100.00 | 0.20 | 0.00 |
| VanderSchaaf | Justin            |   | Warehouse (CW)         | August 5, 2015 03:41 PM   | Pass | 90.00  | 0.20 | 0.00 |
| Vogel        | Jerry             |   | Production (CE)        | May 14, 2015 12:05 PM     | Pass | 100.00 | 0.20 | 0.00 |
| Volenberg    | David             | A | EHS (CG)               | June 30, 2015 07:21 AM    | Pass | 90.00  | 0.20 | 0.00 |



## Users That Have Taken a Course

Users selected: 160 AND Course selected: 1 AND Date/Time BETWEEN January 1, 2015 12:00 AM AND September 21, 2015 11:59 PM

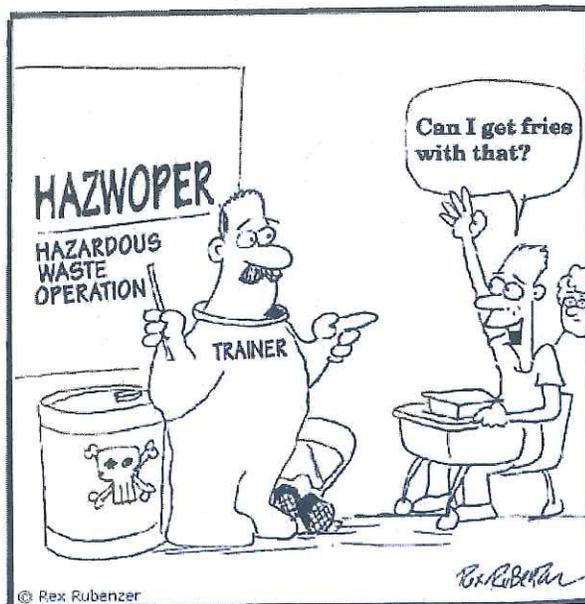
|             |          |   |                        |                           |      |        |      |      |
|-------------|----------|---|------------------------|---------------------------|------|--------|------|------|
| Vomastic    | Kathy    |   | Process Logistics (CG) | March 24, 2015 10:08 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Vomastic    | Kathy    |   | Process Logistics (CG) | July 15, 2015 10:12 AM    | Pass | 100.00 | 0.20 | 0.00 |
| Votis       | Eric     | A | Production (CE)        | April 24, 2015 12:56 AM   | Pass | 100.00 | 0.20 | 0.00 |
| Walker      | Stephen  | L | Laboratory (CA)        | June 5, 2015 07:30 AM     | Pass | 100.00 | 0.20 | 0.00 |
| Waraczynski | Joshua   |   | Production (CE)        | April 18, 2015 01:52 PM   | Pass | 100.00 | 0.20 | 0.00 |
| Warborg     | Benjamin | M | Engineering (CE)       | June 3, 2015 03:55 PM     | Pass | 90.00  | 0.20 | 0.00 |
| Warborg     | Joy      | R | EHS (CG)               | June 16, 2015 12:30 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Welsh       | Dave     |   | EHS (CG)               | May 6, 2015 11:08 AM      | Pass | 100.00 | 0.20 | 0.00 |
| Whitney     | Ryan     | P | Production (CE)        | May 5, 2015 04:17 PM      | Pass | 100.00 | 0.20 | 0.00 |
| Wiley       | Michelle |   | Quality (CG)           | April 30, 2015 02:52 PM   | Pass | 100.00 | 0.20 | 0.00 |
| Wilson      | Joshua   | R | Production (CE)        | April 21, 2015 01:44 PM   | Pass | 100.00 | 0.20 | 0.00 |
| Witkowski   | Devin    |   | Production (CE)        | January 15, 2015 03:20 PM | Pass | 100.00 | 0.20 | 0.00 |
| Witkowski   | Devin    |   | Production (CE)        | June 15, 2015 10:00 PM    | Pass | 100.00 | 0.20 | 0.00 |
| Wolfe       | Joshua   | D | Process Logistics (CG) | April 23, 2015 03:47 PM   | Pass | 100.00 | 0.20 | 0.00 |



# HAZARDOUS WASTE

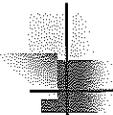
## Awareness Training

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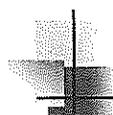
## TRAINING OUTLINE

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- What's the big deal with hazardous waste?
- How to identify hazardous waste from non-hazardous waste
- How to properly manage hazardous waste
- How to properly track hazardous waste
- How to properly dispose of hazardous waste

---

Page (1 - 4)



## What's the Big Deal?

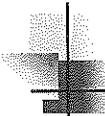
---

- Resource Conservation and Recovery Act
  - Passed in 1976
  - Referred to as RCRA
  - Enforced by US EPA
  - Individual State Requirements (may be more stringent than Federal)

---

Page (1 - 5)





## RCRA Goals

---

- Protect Human Health and the Environment
- Reduce Waste and Conserve Energy and Natural Resources
- Reduce or Eliminate Hazardous Waste Generation

---

#1

All That Apply

What statements are true about RCRA?

- It stands for Resource Conservation and Recovery Act.
- A goal is to Conserve Energy and Natural Resources
- It was passed in 1976.
- A goal is to Reduce Hazardous Waste Generation
- It is enforced by the US EPA.

---

Page (2 - 1)



## Is it a Big Deal?

Improperly managing hazardous waste can result in fines and possible imprisonment.



- #2  
Improperly managing hazardous waste can result in fines and possible imprisonment.
- True
  - False

True / False

Page (3 - 1)

## Is it Hazardous Waste or Non-hazardous Waste?



Page (3 - 2)



## FIRST, is it Solid waste ?

- Solid Waste is any discarded material:
  - In all physical forms; liquid, gas, or solid
  - Can be hazardous or non-hazardous
- Solid waste is exempt from RCRA:
  - When used as an ingredient in a process to make a product (ex. Line flush used for process cleanout)

Page (3 - 3)

## Second, Is the Solid Waste a Hazardous Waste?

- There are two ways to identify hazardous waste:
  - Is it a Characteristic Waste?  
(40 CFR 261 Subpart C)
  - Is it a Listed Waste?  
(40 CFR 261 Subpart D)

#3

All Hazardous Waste has been LISTED by the EPA as being hazardous.

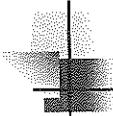
True

False

True / False

Page (4 - 1)





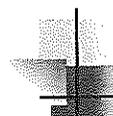
## There are four Characteristics.

---

- Ignitable
- Corrosive
- Reactive
- Toxic (by TCLP)

---

Page (4 - 2)



## IGNITABLE

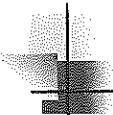
---

- Waste Code D001
- Liquids with a Flashpoint  $\leq 140^{\circ}$  F
- Non-liquids capable of fire through friction, moisture, or spontaneous chemical change
- Oxidizers
- Ignitable Compressed Gas

---

Page (4 - 3)





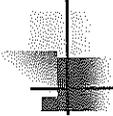
## CORROSIVE

---

- Waste Code D002
- Aqueous with a pH of  $\leq 2$  or  $\geq 12.5$
- Liquid that corrodes plain carbon steel at a rate  $>0.25''$  per year

---

Page (4 - 4)



## REACTIVE

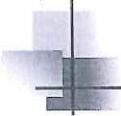
---

- Waste Code D003
- Normally unstable; readily undergoes violent change without detonating
- Reacts violently with water; generating harmful vapors
- Can detonate or explode at standard temperature and pressure or when heated

---

Page (4 - 5)





## TOXIC (BY TCLP)

---

- Waste Codes D004 – D043
  
- Determined by Toxic Characteristic Leachate Procedure; simulates leaching action in a landfill
  
- Includes some Metals, Organics & Pesticides (ex. Chromium – D007)

---

#4

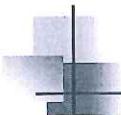
The characteristics of a hazardous waste include the following:

Multiple Choice

- Anything that touches the plant floor.
- Ignitable, Toxic, Soluble, and Reactive
- Ignitable, Corrosive, Toxic and Reactive
- Ignitable, Corrosive, Toxic and Insoluble

---

Page (5 - 1)



## Mixtures of Nonhazardous and Characteristic Hazardous Waste

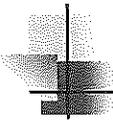
---

- Mixtures are Hazardous Waste unless:
  - The resulting mixture no longer exhibits the characteristic of hazardous waste

It is unlawful to deliberately dilute a waste to render it nonhazardous.

**“DILUTION IS NOT THE SOLUTION”**



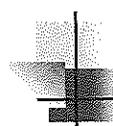


## Mixtures of Nonhazardous and Listed Hazardous Wastes.

---

- Mixture is a Listed Hazardous Waste.

Can only be excluded from regulation by a delisting petition which must demonstrate the characteristic for which it is listed is no longer present.



## Derived-From Rule

---

- Waste generated from the treatment, storage, or disposal of hazardous waste, including residue, ash, dust, or leachate, is classified hazardous waste.
  - Ex. Still bottoms from the recovery/recycle of a hazardous waste.



**"TRICL" – an acronym to help  
you remember.**

---

- TOXIC
- REACTIVE
- IGNITABLE
- CORROSIVE
- LISTED

---

#5

Multiple Choice

Choose the BEST answer to complete the following statement:

"DILUTION IS \_\_\_\_\_."

- THE OPPOSITE OF INFLATION
- A REVOLUTION
- WITHOUT CONVULSION
- NOT THE SOLUTION

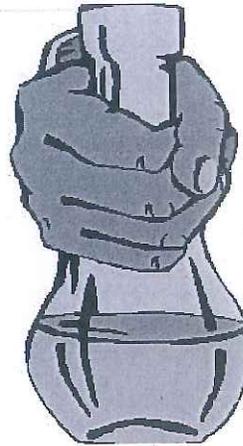
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Page (6 - 1)



## Empty Containers

Less than one inch of residue or no more than 3% by weight of total capacity are considered RCRA-empty; Otherwise, they must be handled as hazardous waste.



Page (6 - 2)

## Hazardous Waste Determination

- The best methods for determining if the waste is hazardous is by:
  - Testing the waste for flashpoint, pH and TCLP
  - Use knowledge from MSDS or waste generating process

#6

Multiple Choice

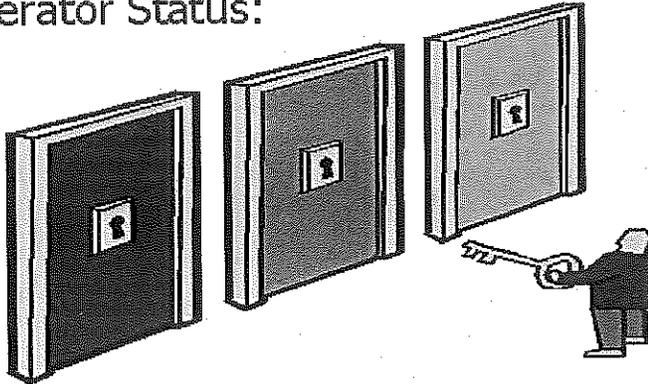
What is the BEST method for recognizing a hazardous waste?

- Just assume that it is hazardous waste.
- Ask the garbage man.
- Smell the waste.
- Test the waste or use knowledge from a MSDS or waste generating process.



## How do I Manage Hazardous Waste?

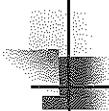
### Generator Status:



## Generators

- Any person, by site specific, whose act or process produces Characteristic or Listed Hazardous Waste is subject to regulation.
- Generator Status determines the level of regulatory requirement.





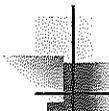
## Generator Status – 3 Levels

---

- Very Small or Conditionally Exempt Generator
  
- Small Quantity Generator
  
- Large Quantity Generator

---

Page (7 - 4)



## Conditionally Exempt Generator

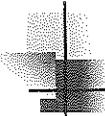
---

- Generates less than 220 lbs / month
- Accumulates less than 2200 lbs maximum
- Unlimited storage time
- No annual training requirement
- No reporting requirement
- No Waste Minimization Plan requirement
- Manifest requirement varies by State

---

Page (7 - 5)





## Small Quantity Generator

- Generates between 220 & 2200 lbs / month
- Accumulates 13,200 lbs maximum
- Stores  $\leq 180$  days (TSD facility is  $< 200$  miles);  
 $\leq 270$  days (TSD facility is  $\geq 200$  miles)
- EPA ID Number required
- Annual training required
- Biennial reporting required (varies by State)
- Contingency Plan required
- Manifest / Manifest Exception Reports required
- Inspections required
- Waste Minimization Plan required

---

Page (7 - 6)



## Large Quantity Generator

- Generates  $> 2200$  lbs / month
- No limit on amount accumulated
- Stores  $\leq 90$  days
- EPA ID Number required
- Annual training required
- Biennial reporting required (varies by State)
- Required inspections
- Manifests / Manifest exception reports required
- Contingency Plan required
- Waste Minimization Plan required

---

#7

Multiple Choice

A facility that generates 2400 pounds of hazardous waste in any given month is classified as a:

- Large Quantity Generator
- Very Large Quantity Generator
- Small Quantity Generator
- Conditionally Exempt Generator



## Generator Storage Management

- Storage Levels
  - Collection Points
  - Satellite Accumulation Points
  - Designated Storage Area

### Collection



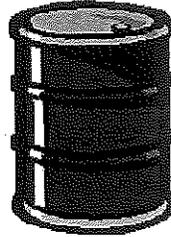
### Points

- The point where waste is collected (drip pans, troughs, pails, containment).
  - Material should be removed from collection points to satellite accumulation point in a timely manner.
  - Bulk collection within 24/hrs
  - Hydrite SOP says remove each shift



## Satellite Accumulation Points

An area near the point of generation where up to 55 gallons of hazardous waste (1 qt. Acutely hazardous waste) may be accumulated before it must be moved to a designated storage area.



#8

True / False

Up to 55 gallons of a hazardous waste may be accumulated in an area of close proximity to a waste generating process before it must be moved to a designated waste storage area.

- True  
 False

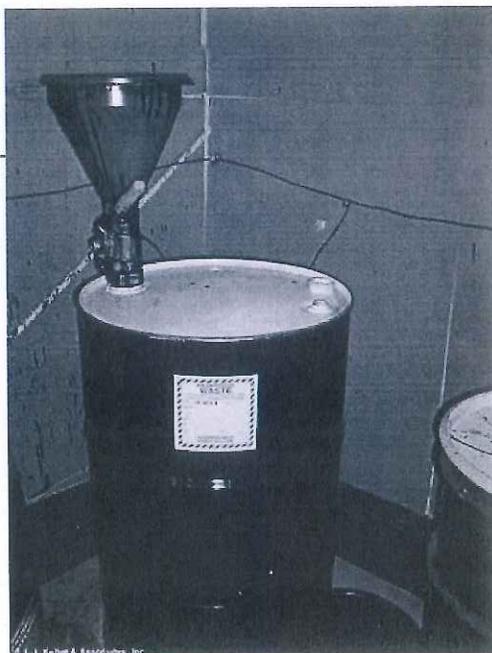
Page (9 - 1)

## Satellite Accumulation Points

- Per RCRA, Containers:
  - Must be under control of the operator
  - Must be in good condition and compatible with the waste
  - Must be closed, unless adding to it
  - Must be inspected weekly
  - Must be labeled "Hazardous Waste" and I.D. with waste type/hazard

Page (9 - 2)





#9

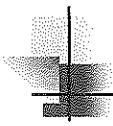
All That Apply

Containers used for temporarily collecting hazardous waste must be:

- Compatible with the hazardous waste it contains.
- Labeled "Hazardous Waste" and include I.D. of material with hazard type
- DOT approved.
- Disposed of in the dumpster.
- Closed, except when adding waste.

Page (10 - 1)





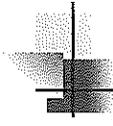
## Satellite Accumulation Points

---

- When container is full, it must be dated with the Accumulation Start Date\* and moved to the designated hazardous waste storage area within 3 days.
  - \* 90 day storage for LQG begins
  - \*180/270 day storage for SQG begins

---

Page (10 - 2)



## Satellite Accumulation Points

---

- If the Satellite Accumulation container is located in the Designated Storage Area, the container is marked with the Accumulation Start Date the first day of use.

---

#10

The Accumulation Start Date signifies the beginning of a Generator's Hazardous Waste Storage time requirement.

True / False

True

False

---

Page (11 - 1)





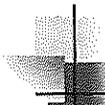
## Hazardous Waste Storage

---

- Designated area where hazardous wastes are stored until it is shipped off-site to a permitted TSD (approval in place).
  - Must be dated with Accumulation Start Date
  - Must be clearly identified as Hazardous Waste
  - Must have adequate aisle space for inspections and emergency response
  - Ignitable/reactive waste stored minimum of 50' from property line and with a buffer between

---

Page (11 - 2)



## Hazardous Waste Storage

---

- Must have fire extinguishing and spill control equipment readily available
- Weekly inspections with documentation for leaks and deterioration of drums
- Daily inspections for bulk storage (fuels)

---

Page (11 - 3)





#11

All That Apply

Hazardous Waste Storage requirements include the following:

- There must be weekly inspections
- There must be adequate aisle space for emergency response
- There are no specific requirements
- Fire extinguishing and spill control equipment must be readily available
- Containers must be dated with Accumulation Start Date

Page (12 - 1)



## Transfer Facility Requirements

- Requires EPA ID No.
- 10 Day Storage Limit
- Waste stored separately from Generator waste
- Inspections
  - Daily inspections if waste stored on trailers
  - Weekly inspections if stored inside

---

Page (12 - 2)

## Transfer Facility Requirements

- Required Waste Receipt Logs, including
  - Waste description & physical form (liquid)
  - Waste code (D001)
  - Quantity
  - Location stored
  - Manifest number and document number

---

#12

True / False

Transfer Facilities are only allowed to store intransit Hazardous Waste on site for a maximum of 10 days.

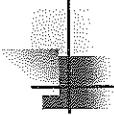
True

False

---

Page (13 - 1)





## TSD Facility Requirements

---

- Part B Permit (Plan of Operation)
- EPA ID No.
- Permitted Vessels
- Waste Analysis Plan
- Security Requirements
- Inspections
- Training / Medical Surveillance

---

Page (13 - 2)



## TSD Facility Requirements

---

- Storage Requirements
- Contingency Plans (Prepared / Prevention)
- Operation Record-profiles, manifests, tracking
- Required Notices
- Annual Reporting
- Waste Minimization Plan
- Air Emission Standards
- Closure & Financial Responsibility

---

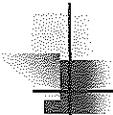
#13

True / False

A Treatment, Storage and Disposal Facility (TSDF) must maintain the conditions of Part B Permit.

- True  
 False

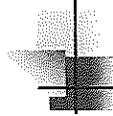




## How is Hazardous Waste Tracked?

---

- "Cradle to Grave" Tracking System
- From the point of Generation to the point of Disposal
- Instrument - Hazardous Waste Manifest
  - New standardized Form 2006
- Tracked by EPA ID Numbers



## "Cradle to Grave" System

---

- PARTICIPANTS IN THE SYSTEM
  - Generators of hazardous waste
  - Transporters of hazardous waste (including Transfer Facilities)
  - Treatment, Storage, Disposal Facilities (TSDF)
  - Individual States



## Hazardous Waste Manifest

- Required when shipping Hazardous Waste, unless Conditionally Exempt Status
- Use Standardized Form
- Generator Name, Address & EPA ID No. is a Manifest requirement for tracking
- Certifies Waste Minimization Plan
- Manifest Retention – 3 years
- Landban Form requirements (varies by State)

#14

Multiple Choice

Each Hazardous Waste shipment can be tracked to the generator because the manifest includes:

- The generator's name, address and EPA ID number
- An emergency phone number
- The signature of the generator and the transporter
- A description of the waste

Page (15 - 1) (Feedback Only)

## How is Hazardous Waste Tracked?

- "Cradle to Grave" Tracking System
- From the point of Generation to the point of Disposal
- Document - Hazardous Waste Manifest
  - New standardized Form 2006
- Tracked by EPA ID Numbers







#16

Multiple Choice

Aqueous corrosive Hazardous Waste may be:

- Disposed directly into the sewer system
- Treated in the Elementary Neutralization Unit (ENU) and sewer
- Diluted until it is no longer hazardous
- Taken to a local municipal waste collection center

Page (17 - 1) (Feedback Only)

TRICL stands for

- Toxic
- Reactive
- Ignitable (FP < 140°F)
- Corrosive (pH < = 2.0 or > = 12.5)
- List (F list, K list, P list, or U list)

#17

Matching

What do the following letters in the acronym, TRICL, stand for?

- Flashpoint less than or equal to 140°F
- Reacts violently with water or other substance
- Toxic by TCLP lab analysis
- Found on a list such as the F list
- pH < = 2.0 or pH > = 12.5

I  
R  
T  
L  
C





CHEMICAL CO.

PROCESS VENT  
STATEMENT OF CERTIFICATION

PER s. NR664.1030(5) and NR665.1030(4), WISCONSIN ADMINISTRATIVE CODE  
SUBCHAPTER AA DOES NOT APPLY

Signature of this statement certifies that all of the process vents at Hydrite Chemical, Co., Cottage Grove, Wisconsin that would otherwise be subject to NR 664 Subchapter AA and NR665 Subchapter AA are equipped with and operating air emission controls according to the process vent requirements in 40 CFR 63, Subpart DD, as outlined in the current source operation permit no. 113063390-P12.

Specifically, this includes the following equipment and operation permit conditions.

Equipment

P01, P02, P03 – Distillation Columns #1, #2, and #3  
P11, P30 – Thin Film Evaporators / LUWAs #1 and #4  
P07 – Vacuum Pot

Storage Tanks

T212, T213, T214, T215, T218, T219, T220, T221, T241, T242

Licensed Fuel-Blending Tanks

T401, T402

90-day Storage Tanks

T204, T205, T405

Operation Permit Conditions

113063390-P12, Section I.G.1. and Section I.G.2.  
113063390-P12, Section I.H.1. and Section I.H.2  
113063390-P12, Section I.M.1. and Section I.M.2.

  
\_\_\_\_\_  
Joseph J. Weishar  
Vice President – Operations  
Hydrite Chemical Co.

10/7/2013  
Date





HAZARDOUS WASTE TANK  
STATEMENT OF CERTIFICATION

PER s. NR664.1080(2)(g) and NR665.1080(2)(g), WISCONSIN ADMINISTRATIVE CODE  
SUBCHAPTER CC DOES NOT APPLY  
TO HAZARDOUS WASTE STORAGE TANKS

Signature of this statement certifies that hazardous waste storage tanks at Hydrite Chemical, Co., Cottage Grove, Wisconsin that would otherwise be subject to NR 664 Subchapter CC and NR 665 Subchapter CC are equipped with and operating air emission controls according to the requirements in 40 CFR 63, Subpart DD, as outlined in the current source operation permit no. 113063390-P12.

None of the hazardous waste storage tanks utilize air emission controls that include an enclosure.

Specifically this includes the following storage tanks and operation permit conditions.

Storage Tanks

T212, T213, T214, T215, T218, T219, T220, T221, T241, T242

Licensed Fuel-Blending Tanks

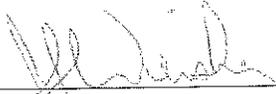
T401, T402

90-day Storage Tanks

T204, T205, T405

Operation Permit Conditions

113063390-P12, Section I.M.1. and Section I.M.2.

  
\_\_\_\_\_  
Joseph J. Weishar  
Vice President – Operations  
Hydrite Chemical Co.

10/17/2013  
Date



| RESOURCE DESCRIPTION | LOCATION<br>BRANCH DESIGNATION | CLAS       | QTY at | LOCN | UM | GENERATOR<br>WSTMSTR#      | PICKUP<br>LOT NUMBER | LAST RECPT |
|----------------------|--------------------------------|------------|--------|------|----|----------------------------|----------------------|------------|
|                      | 138482-MK-291943               |            |        |      |    | 138482                     | 291943               | 09/15/15   |
|                      | Resource Total:                |            |        | 20   |    |                            |                      |            |
| RI004301             | CRWN,CRK&SEAL AURORA WST 435#  | CE110 WSTE |        | 6    | EA | CROWN, CORK & SEAL CO. #58 | 138299 291744        | 09/11/15   |
|                      | 138299-CG-291744               |            |        |      |    |                            |                      |            |
|                      | CE110 WSTE                     |            |        | 7    | EA | CROWN, CORK & SEAL CO. #58 | 138299 290748        | 09/01/15   |
|                      | 138299-CG-290748               |            |        |      |    |                            |                      |            |
|                      | CE110 WSTE                     |            |        | 7    | EA | CROWN, CORK & SEAL CO. #58 | 138299 290749        | 09/04/15   |
|                      | 138299-CG-290749               |            |        |      |    |                            |                      |            |
|                      | Resource Total:                |            |        | 20   |    |                            |                      |            |
| RI004601             | GENE FEEDS FOR RC ACETONE 400# | CE103 WSTE |        | 1    | EA | OXBO INTERNATIONAL         | 141554 283199        | 01/23/15   |
|                      | 141554-MK-283199               |            |        |      |    |                            |                      |            |
|                      | Resource Total:                |            |        | 1    |    |                            |                      |            |
| RI004701             | KIT PACKERS WASTE CS 375# TPD  | CE103 WSTE |        | 12   | EA | KITPACKERS & RESINLAB      | 137799 290850        | 08/11/15   |
|                      | 137799-MK-290850               |            |        |      |    |                            |                      |            |
|                      | CE103 WSTE                     |            |        | 20   | EA | KITPACKERS & RESINLAB      | 137799 289267        | 07/06/15   |
|                      | 137799-MK-289267               |            |        |      |    |                            |                      |            |
|                      | Resource Total:                |            |        | 32   |    |                            |                      |            |
| RI007600             | PPG "DCS" BULK FOR RECYCLE     | T402 WSTE  | 40,800 |      | LB | PPG INDUSTRIES             | 136121 291550        | 09/10/15   |
|                      | 136121-CG-291550               |            |        |      |    |                            |                      |            |
|                      | Resource Total:                |            | 40,800 |      |    |                            |                      |            |
| RI008101             | CRENLO WASTE 309718 386# TPD   | CE111 WSTE |        | 25   | EA | CRENLO, INC. PLANT 2       | 973 289691           | 07/16/15   |
|                      | 973-MK-289691                  |            |        |      |    |                            |                      |            |
|                      | Resource Total:                |            |        | 25   |    |                            |                      |            |
| RI008201             | AMERICAN PKG WASTE WS 400# TSD | CE114 WSTE |        | 3    | EA | AMERICAN PACKAGING COMPANY | 137742 289929        | 08/17/15   |
|                      | 137742-MK-289929               |            |        |      |    |                            |                      |            |
|                      | CE114 WSTE                     |            |        | 4    | EA | AMERICAN PACKAGING COMPANY | 137742 289920        | 08/10/15   |
|                      | 137742-MK-289920               |            |        |      |    |                            |                      |            |
|                      | Resource Total:                |            |        | 7    |    |                            |                      |            |
| RI009600             | PPG WASTE SPECTRACLEAN BULK    | T221 WSTE  | 17,200 |      | LB | DECOSTAR INDUSTRIES        | 139393 291571        | 09/18/15   |
|                      | 139393-CG-291571               |            |        |      |    |                            |                      |            |
|                      | T221 WSTE                      |            | 6,740  |      | LB | DECOSTAR INDUSTRIES        | 139393 291568        | 09/08/15   |
|                      | 139393-CG-291568               |            |        |      |    |                            |                      |            |
|                      | T221 WSTE                      |            | 17,620 |      | LB | DECOSTAR INDUSTRIES        | 139393 291567        | 09/05/15   |
|                      | 139393-CG-291567               |            |        |      |    |                            |                      |            |
|                      | T221 WSTE                      |            | 11,280 |      | LB | DECOSTAR INDUSTRIES        | 139393 290359        | 09/01/15   |
|                      | 139393-CG-290359               |            |        |      |    |                            |                      |            |
|                      | Resource Total:                |            | 52,840 |      |    |                            |                      |            |



| RESOURCE DESCRIPTION | LOCATION<br>BRANCH DESIGNATION | CLAS       | QTY at | LOCN | UM | GENERATOR PICKUP<br>WSTMSTR#      | LOT NUMBER | LAST RECPT |
|----------------------|--------------------------------|------------|--------|------|----|-----------------------------------|------------|------------|
| RI010306             | SIEGWERK WASTE SOLVENT2373#STK | CE110 WSTE |        | 11   | EA | SIEGWERK USA                      |            |            |
|                      | 128963-CG-292122               |            |        |      |    | 128963                            | 292122     | 09/16/15   |
|                      | Resource Total:                |            |        | 11   |    |                                   |            |            |
| RI010901             | GENERIC MS FEEDSTOCK 378# TSD  | CE108 WSTE |        | 45   | EA | TRUE VALUE MANUFACTURING          |            |            |
|                      | 140797-MK-290575               |            |        |      |    | 140797                            | 290575     | 08/11/15   |
|                      | Resource Total:                |            |        | 45   |    |                                   |            |            |
| RI012001             | GLENROY WSTE PRESS WASH 365#   | CE114 WSTE |        | 35   | EA | GLENROY, INC.                     |            |            |
|                      | 131120-MK-291211               |            |        |      |    | 131120                            | 291211     | 08/25/15   |
|                      | Resource Total:                |            |        | 35   |    |                                   |            |            |
| RI012700             | ASHL PERF MTL RC SOL POLY BLND | T212 WSTE  | 37,040 |      | LB | ASHLAND PERFORMANCE MATERIALS     |            |            |
|                      | 134740-CG-289882               |            |        |      |    | 134740                            | 289882     | 09/10/15   |
|                      | T218 WSTE                      | 38,840     |        |      | LB | ASHLAND PERFORMANCE MATERIALS     |            |            |
|                      | 134740-CG-289881               |            |        |      |    | 134740                            | 289881     | 08/27/15   |
|                      | Resource Total:                |            | 75,880 |      |    |                                   |            |            |
| RI013006             | BEMIS PP WASTE ETH ACET 24686# | CE110 WSTE |        | 12   | EA | BEMIS PERFORMANCE PACKAGING       |            |            |
|                      | 136380-CG-291654               |            |        |      |    | 136380                            | 291654     | 09/03/15   |
|                      | Resource Total:                |            |        | 12   |    |                                   |            |            |
| RI013101             | BEMIS PKG WST FLEXO 80/20 410# | CE104 WSTE |        | 72   | EA | BEMIS PACKAGING                   |            |            |
|                      | 136391-CG-291662               |            |        |      |    | 136391                            | 291662     | 09/09/15   |
|                      | Resource Total:                |            |        | 72   |    |                                   |            |            |
| RI014001             | CNH CORPORATION (PPG) WASTE    | CE129 WSTE |        | 20   | EA | CASE NEW HOLLAND - RACINE PLANT   |            |            |
|                      | 143957-MK-281127               |            |        |      |    | 143957                            | 281127     | 12/09/14   |
|                      | CE129 WSTE                     | 5          |        |      | EA | CASE NEW HOLLAND - RACINE PLANT   |            |            |
|                      | 143957-MK-288846               |            |        |      |    | 143957                            | 288846     | 06/26/15   |
|                      | CE129 WSTE                     | 17         |        |      | EA | CASE NEW HOLLAND - RACINE PLANT   |            |            |
|                      | 143957-MK-285144               |            |        |      |    | 143957                            | 285144     | 03/17/15   |
|                      | Resource Total:                |            |        | 42   |    |                                   |            |            |
| RI014301             | CURWOOD (IL) WASTE SOLVENT     | CE107 WSTE |        | 10   | EA | BEMIS COMPANY, INC                |            |            |
|                      | 143222-MK-290373               |            |        |      |    | 143222                            | 290373     | 08/05/15   |
|                      | Resource Total:                |            |        | 10   |    |                                   |            |            |
| RI015606             | NAVISTAR INCOMING WASTE D 538C | CE113 WSTE |        | 11   | EA | NEXRO SOLUTIONS                   |            |            |
|                      | 144039-CG-292124               |            |        |      |    | 144039                            | 292124     | 09/16/15   |
|                      | Resource Total:                |            |        | 11   |    |                                   |            |            |
| RI015801             | HARLEY DAVIDSON WASTE PURGE    | CE102 WSTE |        | 71   | EA | HARLEY DAVIDSON MOTOR CO.OPS, INC |            |            |
|                      | 144606-MK-291565               |            |        |      |    | 144606                            | 291565     | 09/01/15   |
|                      | Resource Total:                |            |        | 71   |    |                                   |            |            |
| RI015900             | CP FILMS NMP CRUDE BULK        | T416 WSTE  | 42,220 |      | LB | CPFILMS INC.                      |            |            |
|                      | 9002651-CG-291588              |            |        |      |    | 9002651                           | 291588     | 09/04/15   |



| RESOURCE DESCRIPTION | LOCATION<br>BRANCH             | CLAS<br>DESIGNATION | QTY at<br>LOCN | UM | GENERATOR<br>WSTMSTR#          | PICKUP<br>LOT NUMBER | LAST RECPT |
|----------------------|--------------------------------|---------------------|----------------|----|--------------------------------|----------------------|------------|
|                      | T416                           | WSTE                | 9,774          | LB | CPFILMS INC.                   |                      |            |
|                      | 9002651-CG-                    | 289240              |                |    | 9002651                        | 289240               | 07/09/15   |
|                      | Resource Total:                |                     | 51,994         |    |                                |                      |            |
| RI016101             | JCI INCOMING WASTE PURGE SOLV  | CE107 WSTE          | 6              | EA | JOHNSON CONTROLS               |                      |            |
|                      | 144238-MK-                     | 289262              |                |    | 144238                         | 289262               | 07/15/15   |
|                      | CE111                          | WSTE                | 12             | EA | JOHNSON CONTROLS               |                      |            |
|                      | 144238-MK-                     | 288763              |                |    | 144238                         | 288763               | 07/01/15   |
|                      | CE114                          | WSTE                | 8              | EA | JOHNSON CONTROLS               |                      |            |
|                      | 144238-MK-                     | 291566              |                |    | 144238                         | 291566               | 09/09/15   |
|                      | Resource Total:                |                     | 26             |    |                                |                      |            |
| RI016301             | COVERIS BATTLE CREEK WASTE     | CE103 WSTE          | 24             | EA | COVERIS FLEXIBLE US, LLC - BAT |                      |            |
|                      | 142937-MK-                     | 290981              |                |    | 142937                         | 290981               | 08/17/15   |
|                      | CE117                          | WSTE                | 20             | EA | COVERIS FLEXIBLE US, LLC - BAT |                      |            |
|                      | 142937-MK-                     | 291650              |                |    | 142937                         | 291650               | 09/03/15   |
|                      | Resource Total:                |                     | 44             |    |                                |                      |            |
| RI016501             | CCK (OH/NXO) WASTE PMA 440#TSD | CE113 WSTE          | 11             | EA | NEXEO SOLUTIONS                |                      |            |
|                      | 144611-CG-                     | 292123              |                |    | 144611                         | 292123               | 09/16/15   |
|                      | Resource Total:                |                     | 11             |    |                                |                      |            |
| RI032501             | BEMIS WASTE WASH SOLV 382#     | CE102 WSTE          | 40             | EA | BEMIS WISCONSIN, LLC           |                      |            |
|                      | 129033-MK-                     | 292321              |                |    | 129033                         | 292321               | 09/18/15   |
|                      | Resource Total:                |                     | 40             |    |                                |                      |            |
| RI038501             | APPLETON WASTE PRESS WASH 374# | CE102 WSTE          | 32             | EA | BEMIS WISCONSIN, LLC           |                      |            |
|                      | 138953-MK-                     | 292148              |                |    | 138953                         | 292148               | 09/18/15   |
|                      | CE111                          | WSTE                | 32             | EA | BEMIS WISCONSIN, LLC           |                      |            |
|                      | 138953-MK-                     | 291522              |                |    | 138953                         | 291522               | 08/28/15   |
|                      | Resource Total:                |                     | 64             |    |                                |                      |            |
| RI039001             | CURWOOD (IA) WASTE SOLVENT 55G | CE115 WSTE          | 18             | EA | BEMIS COMPANY, INC             |                      |            |
|                      | 126148-MK-                     | 291876              |                |    | 126148                         | 291876               | 09/09/15   |
|                      | Resource Total:                |                     | 18             |    |                                |                      |            |
| RI039500             | CURWOOD (NL) WASH SOLVENT BULK | T213 WSTE           | 42,400         | LB | BEMIS WISCONSIN, LLC           |                      |            |
|                      | 135779-MK-                     | 292284              |                |    | 135779                         | 292284               | 09/18/15   |
|                      | Resource Total:                |                     | 42,400         |    |                                |                      |            |
| RI042001             | EAKAS WASTE LT 415# TSD        | CE104 WSTE          | 15             | EA | EAKAS CORPORATION              |                      |            |
|                      | 137046-MK-                     | 291410              |                |    | 137046                         | 291410               | 10/20/15   |
|                      | CE107                          | WSTE                | 16             | EA | EAKAS CORPORATION              |                      |            |
|                      | 137046-MK-                     | 289188              |                |    | 137046                         | 289188               | 08/25/15   |
|                      | CE116                          | WSTE                | 10             | EA | EAKAS CORPORATION              |                      |            |



| RESOURCE DESCRIPTION | LOCATION<br>BRANCH DESIGNATION | CLAS  | QTY at | LOCN | UM | GENERATOR<br>WSTMSTR# | PICKUP<br>LOT NUMBER | LAST RECPT |
|----------------------|--------------------------------|-------|--------|------|----|-----------------------|----------------------|------------|
|                      | 137046-MK-291409               |       |        |      |    | 137046                | 291409               | 10/13/15   |
|                      | CE116                          | WSTE  |        | 17   | EA | EAKAS CORPORATION     |                      |            |
|                      | 137046-MK-291408               |       |        |      |    | 137046                | 291408               | 10/06/15   |
|                      | Resource Total:                |       |        | 58   |    |                       |                      |            |
| RI047001             | HARLEY DAVIDSON LT RC DMS 388# | CE103 | WSTE   | 10   | EA | HARLEY DAVIDSON       |                      |            |
|                      | 137635-MK-291486               |       |        |      |    | 137635                | 291486               | 09/01/15   |
|                      | CE103                          | WSTE  |        | 19   | EA | HARLEY DAVIDSON       |                      |            |
|                      | 131521-MK-291484               |       |        |      |    | 131521                | 291484               | 09/01/15   |
|                      | CE103                          | WSTE  |        | 9    | EA | HARLEY DAVIDSON       |                      |            |
|                      | 137635-MK-291200               |       |        |      |    | 137635                | 291200               | 08/27/15   |
|                      | CE103                          | WSTE  |        | 19   | EA | HARLEY DAVIDSON       |                      |            |
|                      | 131521-MK-292096               |       |        |      |    | 131521                | 292096               | 09/15/15   |
|                      | CE103                          | WSTE  |        | 8    | EA | HARLEY DAVIDSON       |                      |            |
|                      | 137635-MK-292098               |       |        |      |    | 137635                | 292098               | 09/15/15   |
|                      | CE103                          | WSTE  |        | 8    | EA | HARLEY DAVIDSON       |                      |            |
|                      | 137635-MK-291198               |       |        |      |    | 137635                | 291198               | 08/25/15   |
|                      | CE103                          | WSTE  |        | 19   | EA | HARLEY DAVIDSON       |                      |            |
|                      | 131521-MK-291195               |       |        |      |    | 131521                | 291195               | 08/25/15   |
|                      | CE104                          | WSTE  |        | 1    | EA | HARLEY DAVIDSON       |                      |            |
|                      | 137635-MK-286971               |       |        |      |    | 137635                | 286971               | 08/20/15   |
|                      | CE104                          | WSTE  |        | 10   | EA | HARLEY DAVIDSON       |                      |            |
|                      | 137635-MK-291032               |       |        |      |    | 137635                | 291032               | 08/18/15   |
|                      | CE104                          | WSTE  |        | 19   | EA | HARLEY DAVIDSON       |                      |            |
|                      | 131521-MK-291030               |       |        |      |    | 131521                | 291030               | 08/18/15   |
|                      | CE104                          | WSTE  |        | 9    | EA | HARLEY DAVIDSON       |                      |            |
|                      | 137635-MK-290429               |       |        |      |    | 137635                | 290429               | 08/06/15   |
|                      | CE104                          | WSTE  |        | 15   | EA | HARLEY DAVIDSON       |                      |            |
|                      | 131521-MK-286952               |       |        |      |    | 131521                | 286952               | 05/12/15   |
|                      | CE104                          | WSTE  |        | 1    | EA | HARLEY DAVIDSON       |                      |            |
|                      | 137635-MK-290428               |       |        |      |    | 137635                | 290428               | 08/04/15   |
|                      | CE104                          | WSTE  |        | 18   | EA | HARLEY DAVIDSON       |                      |            |
|                      | 137635-MK-286977               |       |        |      |    | 137635                | 286977               | 06/23/15   |
|                      | CE107                          | WSTE  |        | 8    | EA | HARLEY DAVIDSON       |                      |            |
|                      | 137635-MK-290918               |       |        |      |    | 137635                | 290918               | 08/20/15   |



| RESOURCE DESCRIPTION | LOCATION<br>BRANCH             | CLAS<br>DESIGNATION | QTY at | LOCN | UM | GENERATOR<br>WSTMSTR#       | PICKUP<br>LOT NUMBER | LAST RECPT |
|----------------------|--------------------------------|---------------------|--------|------|----|-----------------------------|----------------------|------------|
|                      | CE109                          | WSTE                |        | 7    | EA | HARLEY DAVIDSON             |                      |            |
|                      | 137635-MK-291835               |                     |        |      |    | 137635                      | 291835               | 09/10/15   |
|                      | CE110                          | WSTE                |        | 1    | EA | HARLEY DAVIDSON             |                      |            |
|                      | 131521-MK-286952               |                     |        |      |    | 131521                      | 286952               | 05/12/15   |
|                      | CE116                          | WSTE                |        | 9    | EA | HARLEY DAVIDSON             |                      |            |
|                      | 137635-MK-288967               |                     |        |      |    | 137635                      | 288967               | 07/02/15   |
|                      | Resource Total:                |                     |        | 190  |    |                             |                      |            |
| RI050000             | DUPONT 1,4BUTANEDIOL CRUDE BLK | T167 WSTE           | 42,080 | LB   |    | DUPONT - COOPER RIVER WORKS |                      |            |
|                      | 9000385-CG-291738              |                     |        |      |    | 9000385                     | 291738               | 09/08/15   |
|                      | Resource Total:                |                     | 42,080 |      |    |                             |                      |            |
| RI066000             | S OF S WASTE LAC THIN 506 BULK | T219 WSTE           | 31,480 | LB   |    | SEYMOUR OF SYCAMORE         |                      |            |
|                      | 506-MK-291823                  |                     |        |      |    | 506                         | 291823               | 09/09/15   |
|                      | Resource Total:                |                     | 31,480 |      |    |                             |                      |            |
| RI069501             | KENDALL PKG WASTE WS 369#      | CE102 WSTE          | 12     | EA   |    | KENDALL PACKAGING           |                      |            |
|                      | 113715-MK-292348               |                     |        |      |    | 113715                      | 292348               | 09/18/15   |
|                      | CE112                          | WSTE                | 8      | EA   |    | KENDALL PACKAGING           |                      |            |
|                      | 113715-MK-291423               |                     |        |      |    | 113715                      | 291423               | 08/26/15   |
|                      | CE116                          | WSTE                | 3      | EA   |    | FREDMAN BAG                 |                      |            |
|                      | 3413-MK-291690                 |                     |        |      |    | 3413                        | 291690               | 09/04/15   |
|                      | CE116                          | WSTE                | 8      | EA   |    | KENDALL PACKAGING           |                      |            |
|                      | 113715-MK-292104               |                     |        |      |    | 113715                      | 292104               | 09/14/15   |
|                      | CE116                          | WSTE                | 2      | EA   |    | FREDMAN BAG                 |                      |            |
|                      | 3413-MK-291888                 |                     |        |      |    | 3413                        | 291888               | 09/11/15   |
|                      | CE116                          | WSTE                | 12     | EA   |    | KENDALL PACKAGING           |                      |            |
|                      | 113715-MK-291901               |                     |        |      |    | 113715                      | 291901               | 09/09/15   |
|                      | CE116                          | WSTE                | 16     | EA   |    | KENDALL PACKAGING           |                      |            |
|                      | 113715-MK-291680               |                     |        |      |    | 113715                      | 291680               | 09/02/15   |
|                      | CE116                          | WSTE                | 3      | EA   |    | FREDMAN BAG                 |                      |            |
|                      | 3413-MK-291504                 |                     |        |      |    | 3413                        | 291504               | 08/28/15   |
|                      | CE116                          | WSTE                | 8      | EA   |    | KENDALL PACKAGING           |                      |            |
|                      | 113715-MK-291288               |                     |        |      |    | 113715                      | 291288               | 08/24/15   |
|                      | CE116                          | WSTE                | 3      | EA   |    | FREDMAN BAG                 |                      |            |
|                      | 3413-MK-291116                 |                     |        |      |    | 3413                        | 291116               | 08/21/15   |
|                      | Resource Total:                |                     | 75     |      |    |                             |                      |            |
| RI086000             | AEEA CRUDE BULK                | T166 WSTE           | 31,960 | LB   |    | SOLVAY, INC                 |                      |            |
|                      | 9001061-MK-291843              |                     |        |      |    | 9001061                     | 291843               | 09/11/15   |



| RESOURCE DESCRIPTION | LOCATION<br>BRANCH DESIGNATION | CLAS                       | QTY at | LOCN | UM | GENERATOR PICKUP<br>WSTMSTR#   | LOT NUMBER | LAST RECPT |
|----------------------|--------------------------------|----------------------------|--------|------|----|--------------------------------|------------|------------|
|                      | T166<br>9001121-CG-291024      | WSTE                       | 3,575  |      | LB | SOLVAY, INC.<br>9001121        | 291024     | 08/17/15   |
|                      | T166<br>9001121-CG-292131      | WSTE                       | 45,180 |      | LB | SOLVAY, INC.<br>9001121        | 292131     | 09/18/15   |
|                      | Resource Total:                |                            | 80,715 |      |    |                                |            |            |
| RI198501             | BEMIS PP WASTE WS 378# TSD     | CE112<br>6829-MK-291283    | 12     |      | EA | BEMIS COMPANY, INC<br>6829     | 291283     | 09/01/15   |
|                      |                                | CE117<br>6829-MK-290982    | 13     |      | EA | BEMIS COMPANY, INC<br>6829     | 290982     | 08/19/15   |
|                      |                                | CE117<br>6829-MK-291495    | 9      |      | EA | BEMIS COMPANY, INC<br>6829     | 291495     | 09/02/15   |
|                      | Resource Total:                |                            | 34     |      |    |                                |            |            |
| RI211001             | WEATHER SHIELD(LS)WST MEK 337# | CE117<br>14863-MK-289732   | 10     |      | EA | WEATHER SHIELD MFG.<br>14863   | 289732     | 07/20/15   |
|                      | Resource Total:                |                            | 10     |      |    |                                |            |            |
| RI211101             | WEATHER SHLD(PF)WASTE MEK 337# | CE115<br>129836-MK-289540  | 4      |      | EA | WEATHER SHIELD MFG.<br>129836  | 289540     | 07/16/15   |
|                      | Resource Total:                |                            | 4      |      |    |                                |            |            |
| RI462801             | MERCURY MARINE WST LT 415# TSD | CE109<br>135729-MK-289653  | 6      |      | EA | MERCURY MARINE<br>135729       | 289653     | 08/20/15   |
|                      |                                | CE109<br>135729-MK-288742  | 5      |      | EA | MERCURY MARINE<br>135729       | 288742     | 07/02/15   |
|                      |                                | CE109<br>135729-MK-287030  | 5      |      | EA | MERCURY MARINE<br>135729       | 287030     | 05/07/15   |
|                      |                                | CE109<br>135729-MK-287660  | 4      |      | EA | MERCURY MARINE<br>135729       | 287660     | 05/28/15   |
|                      |                                | CE114<br>135729-MK-290570  | 3      |      | EA | MERCURY MARINE<br>135729       | 290570     | 08/06/15   |
|                      |                                | CE114<br>135729-MK-288182  | 2      |      | EA | MERCURY MARINE<br>135729       | 288182     | 06/11/15   |
|                      | Resource Total:                |                            | 25     |      |    |                                |            |            |
| RI713006             | 3M DEP CRUDE 2560# PTK         | TR53323R<br>6289-MK-291467 | 20     |      | EA | 3M TMD PLANT<br>6289           | 291467     | 08/27/15   |
|                      | Resource Total:                |                            | 20     |      |    |                                |            |            |
| WS000000             | WST-BULK GEN DISPOSAL BULK LB  | T405<br>144735-CG-273772   | 18,440 |      | LB | HYDRITE CHEMICAL CO.<br>144735 | 273772     | 04/23/14   |
|                      | Resource Total:                |                            | 18,440 |      |    |                                |            |            |



| RESOURCE DESCRIPTION | LOCATION<br>BRANCH DESIGNATION | CLAS              | QTY at | LOCN                            | UM     | GENERATOR PICKUP<br>WSTMSTR# | LOT NUMBER | LAST RECPT |
|----------------------|--------------------------------|-------------------|--------|---------------------------------|--------|------------------------------|------------|------------|
| WS000001             | WST-GENERAL DISPOSAL 55 GA TSD | CE111             | WSTE   | 2                               | EA     | HARLEY DAVIDSON              |            |            |
|                      |                                | 132613-MK-292097  |        |                                 |        | 132613                       | 292097     | 09/15/15   |
|                      |                                | CE112             | WSTE   | 2                               | EA     | HARLEY DAVIDSON              |            |            |
|                      |                                | 132613-MK-291833  |        |                                 |        | 132613                       | 291833     | 09/08/15   |
|                      |                                | Resource Total:   |        | 4                               |        |                              |            |            |
| WS010000             | WST FREE FLOW LIQ. BULK        | T401              | WSTE   | 36,350                          | LB     | BEMIS PACKAGING, INC         |            |            |
|                      |                                | 9002690-MK-281355 |        |                                 |        | 9002690                      | 281355     | 12/02/14   |
|                      |                                | Resource Total:   |        | 36,350                          |        |                              |            |            |
| WS020001             | SOLUBLE SOLIDS 55 GAL TSD      | CE109             | WSTE   | 6                               | EA     | MERCURY MARINE               |            |            |
|                      |                                | 135729-MK-289653  |        |                                 |        | 135729                       | 289653     | 07/16/15   |
|                      |                                | CE114             | WSTE   | 3                               | EA     | MERCURY MARINE               |            |            |
|                      |                                | 135729-MK-288182  |        |                                 |        | 135729                       | 288182     | 06/11/15   |
|                      |                                | CE128             | WSTE   | 1                               | EA     | CRYSTAL CABINET WORKS        |            |            |
|                      |                                | 138482-MK-291722  |        |                                 |        | 138482                       | 291722     | 09/08/15   |
|                      |                                | CE128             | WSTE   | 2                               | EA     | PROFILE FINISHING            |            |            |
|                      |                                | 140927-MK-291733  |        |                                 |        | 140927                       | 291733     | 09/04/15   |
|                      |                                | CE128             | WSTE   | 2                               | EA     | BEMIS COMPANY, INC           |            |            |
|                      |                                | 6829-MK-291495    |        |                                 |        | 6829                         | 291495     | 09/02/15   |
| CE128                | WSTE                           | 3                 | EA     | COVERIS FLEXIBLE US, LLC - BAT  |        |                              |            |            |
| 142937-MK-291650     |                                |                   |        | 142937                          | 291650 | 09/03/15                     |            |            |
| CE128                | WSTE                           | 1                 | EA     | PROFILE FINISHING SYSTEMS, INC. |        |                              |            |            |
| 140932-MK-291953     |                                |                   |        | 140932                          | 291953 | 09/14/15                     |            |            |
| CE128                | WSTE                           | 1                 | EA     | PROFILE FINISHING               |        |                              |            |            |
| 140927-MK-292045     |                                |                   |        | 140927                          | 292045 | 09/11/15                     |            |            |
| CE128                | WSTE                           | 2                 | EA     | MCNEILUS TRUCK & MFG.           |        |                              |            |            |
| 135707-MK-291072     |                                |                   |        | 135707                          | 291072 | 08/25/15                     |            |            |
| CE128                | WSTE                           | 1                 | EA     | PROFILE FINISHING               |        |                              |            |            |
| 140927-MK-291204     |                                |                   |        | 140927                          | 291204 | 08/21/15                     |            |            |
|                      |                                | Resource Total:   |        | 22                              |        |                              |            |            |
| WS030001             | SOLIDS FOR FUELS 55 GA TSD     | BLUE RACK         | WSTE   | 1                               | EA     | SUN CHEMICAL                 |            |            |
|                      |                                | 134742-CG-288138  |        |                                 |        | 134742                       | 288138     | 06/10/15   |
|                      |                                | CE128             | WSTE   | 1                               | EA     |                              |            |            |
|                      |                                | 0- -0             |        |                                 |        | 0                            | 140775     | 06/17/15   |
| CE128                | WSTE                           | 4                 | EA     |                                 |        |                              |            |            |
|                      |                                | 0- -0             |        |                                 |        | 0                            | 138672     | 08/18/15   |



| RESOURCE DESCRIPTION | LOCATION<br>BRANCH | CLAS<br>DESIGNATION | QTY at | LOCN | UM | GENERATOR<br>WSTMSTR# | PICKUP<br>LOT NUMBER | LAST RECPT |
|----------------------|--------------------|---------------------|--------|------|----|-----------------------|----------------------|------------|
|                      | CE128<br>0- -0     | WSTE                | 7      |      | EA | 0                     | 9002672              | 06/03/15   |
|                      | CE128<br>0- -0     | WSTE                | 5      |      | EA | 0                     | 96050052             | 09/21/15   |
|                      | CE128<br>0- -0     | WSTE                | 8      |      | EA | 0                     | 136107               | 09/21/15   |
|                      | CE128<br>0- -0     | WSTE                | 2      |      | EA | 0                     | 128683               | 09/21/15   |
|                      | CE128<br>0- -0     | WSTE                | 1      |      | EA | 0                     | 124791               | 09/17/15   |
|                      | CE128<br>0- -0     | WSTE                | 4      |      | EA | 0                     | 144601               | 09/14/15   |
|                      | CE128<br>0- -0     | WSTE                | 3      |      | EA | 0                     | 140769               | 09/17/15   |
|                      | CE128<br>0- -0     | WSTE                | 6      |      | EA | 0                     | 131122               | 09/21/15   |
|                      | CE128<br>0- -0     | WSTE                | 2      |      | EA | 0                     | 142981               | 09/21/15   |
|                      | CE128<br>0- -0     | WSTE                | 1      |      | EA | 0                     | 134797               | 09/16/15   |
|                      | CE128<br>0- -0     | WSTE                | 3      |      | EA | 0                     | 144607               | 09/16/15   |
|                      | Resource Total:    |                     | 48     |      |    |                       |                      |            |



| RESOURCE DESCRIPTION | LOCATION<br>BRANCH DESIGNATION | CLAS<br>DESIGNATION            | QTY at | LOCN | UM | GENERATOR<br>WSTMSTR#                     | PICKUP<br>LOT NUMBER | LAST RECP |
|----------------------|--------------------------------|--------------------------------|--------|------|----|---|----------------------|-----------|
| RI001201             | COVERIS LLC WASTE SOLV 390#TPD | CE109 WSTE<br>6650-MK-292035   |        | 19   | EA | COVERIS FLEXIBLES US LLC<br>6650          | 292035               | 09/17/15  |
|                      |                                | CE109 WSTE<br>6650-MK-292033   |        | 19   | EA | COVERIS FLEXIBLES US LLC<br>6650          | 292033               | 09/14/15  |
|                      |                                | CE114 WSTE<br>6650-MK-291717   |        | 12   | EA | COVERIS FLEXIBLES US LLC<br>6650          | 291717               | 09/09/15  |
|                      |                                | CE114 WSTE<br>6650-MK-292210   |        | 11   | EA | COVERIS FLEXIBLES US LLC<br>6650          | 292210               | 09/21/15  |
|                      | Resource Total:                |                                |        | 61   |    |   |                      |           |
| RI002501             | GENERIC RCLT FOR FEEDSTOCK 385 | CE106 WSTE<br>139577-MK-291708 |        | 16   | EA | LINETEC<br>139577                         | 291708               | 09/04/15  |
|                      |                                | CE108 WSTE<br>140932-MK-291953 |        | 5    | EA | PROFILE FINISHING SYSTEMS, INC.<br>140932 | 291953               | 09/14/15  |
|                      |                                | CE109 WSTE<br>139577-MK-291220 |        | 12   | EA | LINETEC<br>139577                         | 291220               | 08/21/15  |
|                      |                                | CE109 WSTE<br>139577-MK-290657 |        | 12   | EA | LINETEC<br>139577                         | 290657               | 08/10/15  |
|                      |                                | CE109 WSTE<br>139577-MK-291957 |        | 12   | EA | LINETEC<br>139577                         | 291957               | 09/11/15  |
|                      |                                | CE110 WSTE<br>138967-MK-280654 |        | 1    | EA | PIONEER METAL<br>138967                   | 280654               | 11/10/14  |
|                      |                                | CE111 WSTE<br>135707-MK-291880 |        | 26   | EA | MCNEILUS TRUCK & MFG.<br>135707           | 291880               | 09/15/15  |
|                      |                                | CE112 WSTE<br>139165-CG-291882 |        | 57   | EA | POLARIS (MN) INDUSTRIES, INC.<br>139165   | 291882               | 09/11/15  |
|                      |                                | CE112 WSTE<br>138921-MK-290285 |        | 1    | EA | IOWA MOLD TOOLING CO. INC.<br>138921      | 290285               | 08/21/15  |
|                      |                                | CE113 WSTE<br>105663-MK-291658 |        | 59   | EA | PIERCE MFG<br>105663                      | 291658               | 09/04/15  |
|                      |                                | CE114 WSTE<br>140972-MK-290406 |        | 15   | EA | NORTHERN COATINGS<br>140972               | 290406               | 08/03/15  |
|                      |                                | CE115 WSTE<br>138967-MK-291403 |        | 2    | EA | PIONEER METAL<br>138967                   | 291403               | 08/26/15  |
|                      |                                | CE115 WSTE<br>137739-MK-291651 |        | 2    | EA | GREAT LAKES TV SEAL<br>137739             | 291651               | 09/02/15  |



| RESOURCE DESCRIPTION | LOCATION<br>BRANCH DESIGNATION | CLAS                      | QTY at | LOCN | UM | GENERATOR PICKUP<br>WSTMSTR#        | LOT NUMBER                    | LAST RECPT |          |
|----------------------|--------------------------------|---------------------------|--------|------|----|-------------------------------------|-------------------------------|------------|----------|
|                      | CE115<br>135710-MK-290292      | WSTE                      |        | 11   | EA | IOWA CONTRACT FABRICATORS<br>135710 | 290292                        | 08/27/15   |          |
|                      | CE115<br>140927-MK-292045      | WSTE                      |        | 1    | EA | PROFILE FINISHING<br>140927         | 292045                        | 09/11/15   |          |
|                      | CE115<br>140927-MK-290347      | WSTE                      |        | 1    | EA | PROFILE FINISHING<br>140927         | 290347                        | 08/04/15   |          |
|                      | CE115<br>118624-MK-290589      | WSTE                      |        | 2    | EA | TRUTH HARDWARE<br>118624            | 290589                        | 08/06/15   |          |
|                      | CE115<br>135707-MK-291072      | WSTE                      |        | 25   | EA | MCNEILUS TRUCK & MFG.<br>135707     | 291072                        | 08/25/15   |          |
|                      | CE115<br>142647-MK-290939      | WSTE                      |        | 1    | EA | TUXCO CORPORATION<br>142647         | 290939                        | 08/13/15   |          |
|                      | CE116<br>140927-MK-290945      | WSTE                      |        | 3    | EA | PROFILE FINISHING<br>140927         | 290945                        | 08/14/15   |          |
|                      | CE116<br>139577-MK-291462      | WSTE                      |        | 8    | EA | LINETEC<br>139577                   | 291462                        | 08/28/15   |          |
|                      | CE116<br>140927-MK-291469      | WSTE                      |        | 2    | EA | PROFILE FINISHING<br>140927         | 291469                        | 08/28/15   |          |
|                      | CE116<br>140927-MK-288384      | WSTE                      |        | 2    | EA | PROFILE FINISHING<br>140927         | 288384                        | 08/20/15   |          |
|                      | CE116<br>139577-MK-290957      | WSTE                      |        | 16   | EA | LINETEC<br>139577                   | 290957                        | 08/14/15   |          |
|                      | CE117<br>135710-MK-291613      | WSTE                      |        | 7    | EA | IOWA CONTRACT FABRICATORS<br>135710 | 291613                        | 09/10/15   |          |
|                      | CE117<br>135707-MK-291624      | WSTE                      |        | 16   | EA | MCNEILUS TRUCK & MFG.<br>135707     | 291624                        | 09/08/15   |          |
|                      | Resource Total:                |                           |        | 315  |    |                                     |                               |            |          |
| RI002601             | DOUGLAS CORP WSTE ACETONE 358# | CE112<br>132145-MK-291673 | WSTE   |      | 5  | EA                                  | DOUGLAS CORPORATION<br>132145 | 291673     | 09/01/15 |
|                      |                                | CE112<br>132145-MK-291674 | WSTE   |      | 5  | EA                                  | DOUGLAS CORPORATION<br>132145 | 291674     | 09/01/15 |
|                      |                                | CE112<br>132145-MK-291675 | WSTE   |      | 6  | EA                                  | DOUGLAS CORPORATION<br>132145 | 291675     | 09/01/15 |
|                      | Resource Total:                |                           |        | 16   |    |                                     |                               |            |          |
| RI003601             | CRYSTAL CABINET WASTE LT 385#  | CE112                     | WSTE   |      | 20 | EA                                  | CRYSTAL CABINET WORKS         |            |          |

